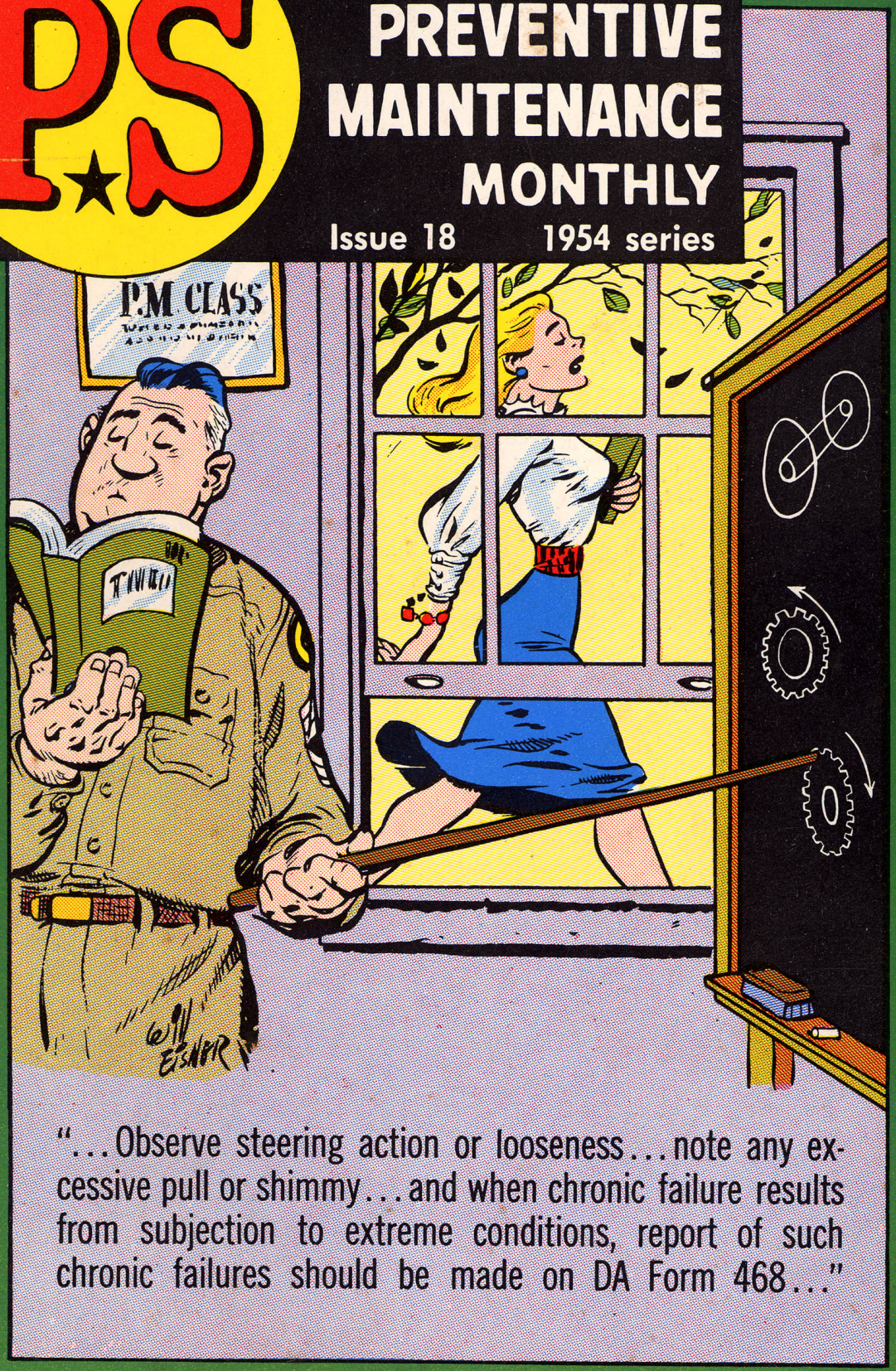
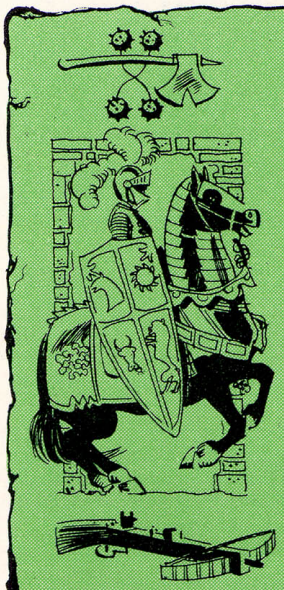
P.S

THE PREVENTIVE MAINTENANCE MONTHLY

Issue 18 1954 series



"...Observe steering action or looseness...note any excessive pull or shimmy...and when chronic failure results from subjection to extreme conditions, report of such chronic failures should be made on DA Form 468..."



For The Lack Of A Nail...

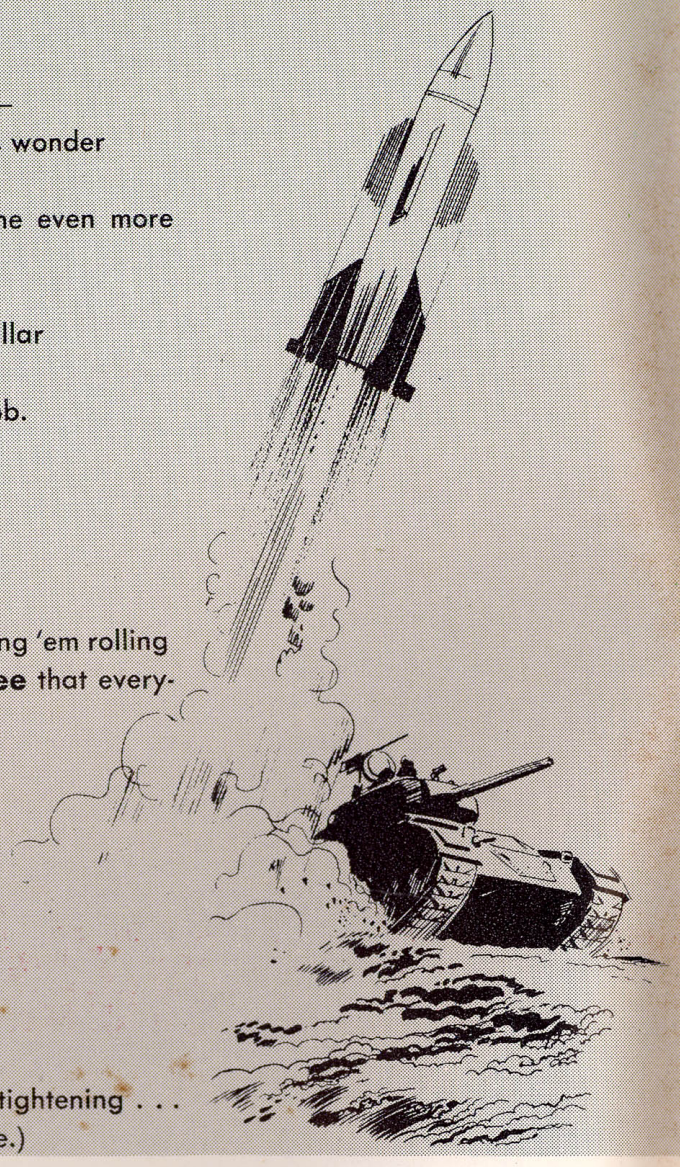
When war was simple—
Just bows, spears, swords, horses and men—
Preventive Maintenance played a part.
But it was easy then:
Keep your sword sharp, your spear pointed, and your horse well-shod.
Like the story about the nail missing from the horseshoe and how the shoe was lost, how the horse and rider (with his message) were lost—and finally, how the battle was lost.

Today war is not so simple.

You have tanks and guns and planes and trucks—
And equipment so complicated that you sometimes wonder what makes it tick.
With all this, Preventive Maintenance has become even more necessary for the winning of battles.
The truck and the tank must roll, and the gun must shoot—or every soldier trained and every dollar spent to win a war go down the drain.
To keep 'em rolling and shooting is everybody's job.
EVERYBODY?—Say **that** again. And repeat.
Private?—yes. PFC?—Definitely.
Sergeant?—and how. Lieutenant?—Yes, sir.
Captain?—Right. Major?—Positively.
Even Colonels and Generals?—Absolutely.
Everybody—but **everybody** has a hand in keeping 'em rolling and shooting. (Of course, people like generals **see** that everything is done just so.)
It's done by putting your truck in the right gear,
Or keeping it greased.
Or adjusting the tank track,
Or cleaning the gun.
Or doing all the things you've got to do to keep your equipment ready for combat.

For lack of a nail—a bolt, some grease, the right adjustment . . . a battle is lost.

Look again—the right care, adjusting, greasing, tightening . . . and a battle is won (and what's more, you're alive.)



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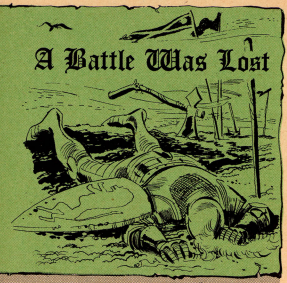

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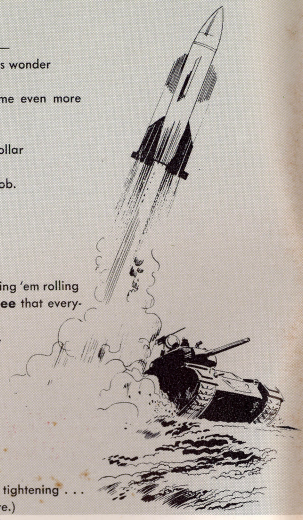

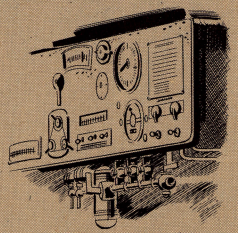

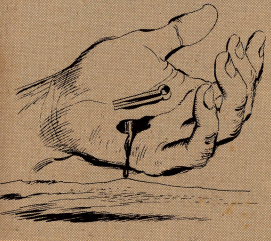

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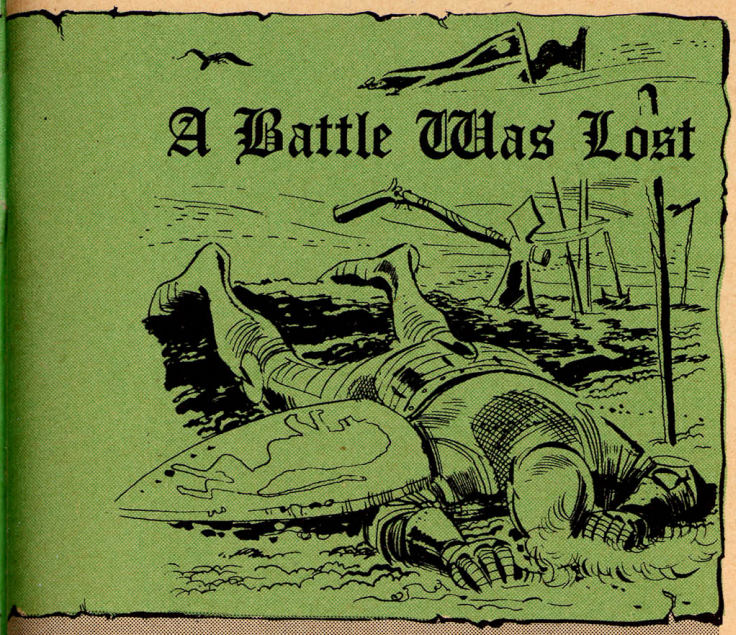

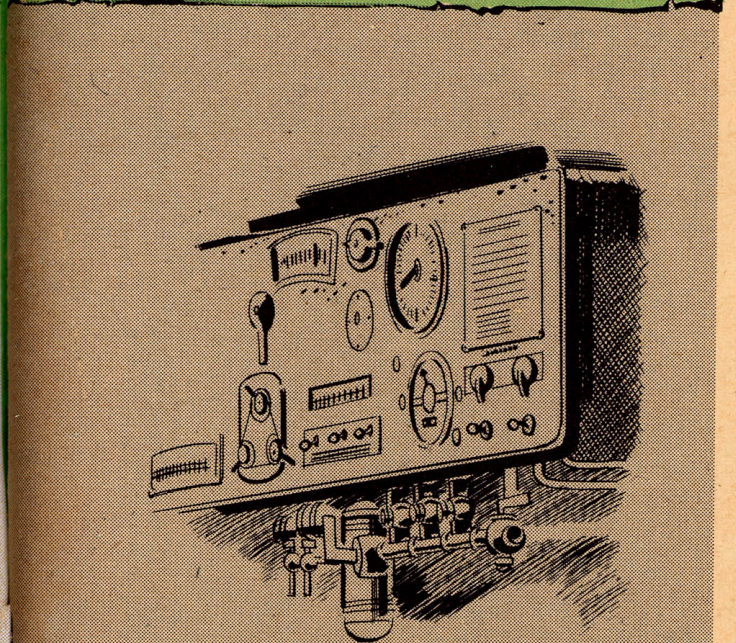

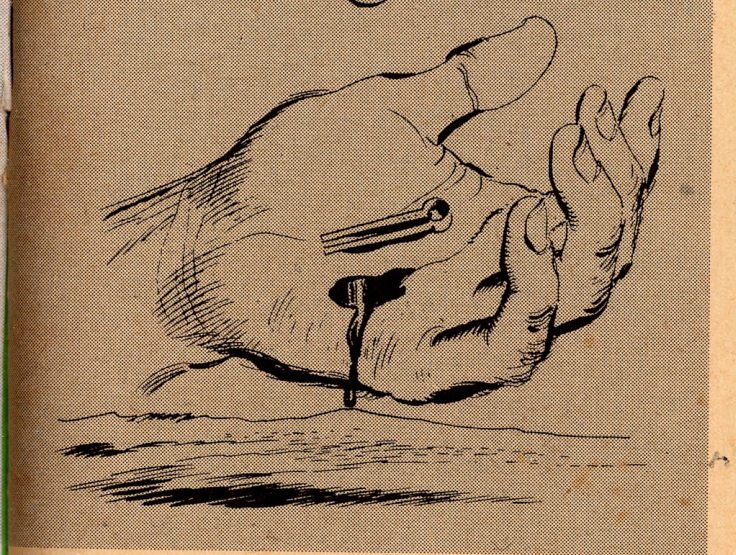

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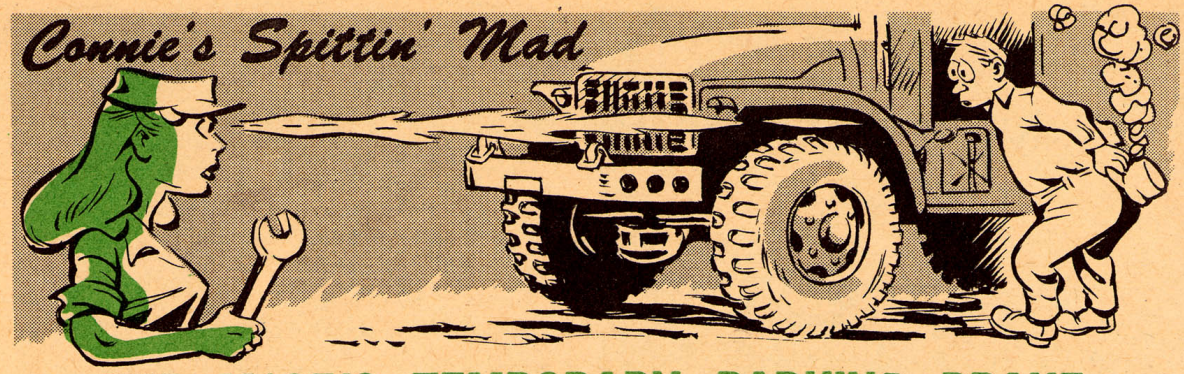


THE M135'S TEMPORARY PARKING BRAKE WASN'T MEANT FOR PLAY

You want to know why I'm all hopped up and spittin' mad? It's those lame brain jokesters who ride in the M135 truck cab along with the driver and flip the temporary parking brake switch to the ON position when the driver's not looking.

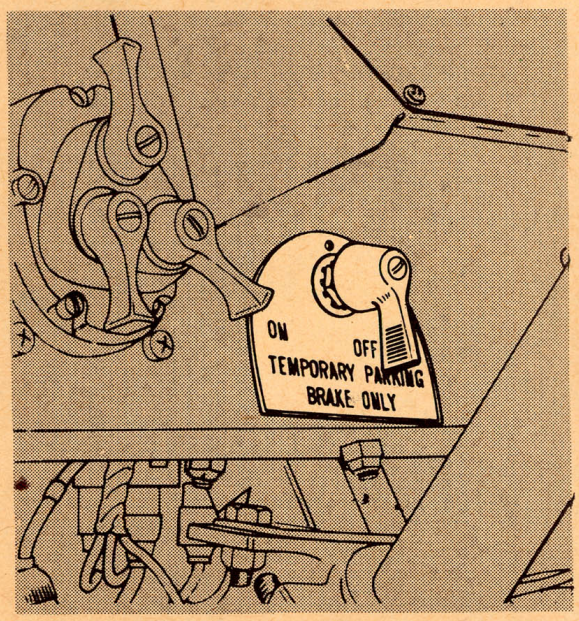
You know what happens? The next time the driver bounces on the brake pedal, there's a good chance of all the wheels locking tight.

This isn't funny because if that M135 is clipping along, somebody'll go sailing thru the windshield, and if there's a human cargo aboard, they'll get stacked up like matches dumped out of a box.

That's what may happen if you're lucky—lucky not to be going around a curve. If you are, then you and your truck'll do somersaults.

That temporary parking brake switch is to be used **only** when the hand-operated parking brake can't be used. You see, with a hydramatic transmission you don't have gears that can be set to hold the truck while you get out and check the wheels. You'll need the temporary parking brake only once in a coon's age.

If you have to use that temporary brake, make it short, because if it's left on for a long time you'll get a dead battery, the brake'll release, and you'll have a runaway truck.



Before starting out with your M135 reach down and make sure that switch is OFF. And make sure those jokers keep their paws off of it.

STUMPY CLANCY LOWERED THE BOOM

Dear Half-Mast,

Just received our new M62 wrecker . . . everything worked fine but one item had us worried. What would happen if the crane operator unconsciously rested his arm on the armchair-like boom cradle when the boom was up and then, perchance, the boom got lowered?

For psychological and physiological reasons (our crane operators hate the name "Stumpy") we'd like to see some sort of protective device attached. Do you have any suggestions?

Ordnance Gang

Dear Gang,

Yep . . . we've just come up with the gadget you're looking for. It's a safety shield attached to the boom (Fig. 1). Here's how it's made—first get yourself a sheet of 16 gage steel (29¾ x 17½); cut and drill holes as in Fig. 2, then secure it to the boom as in Fig. 1. To do that you'll need three bolts (¼-20NC-2x⅝), lock washers and of course the holes in the boom that line up with the ones in the plate.

Half-Mast

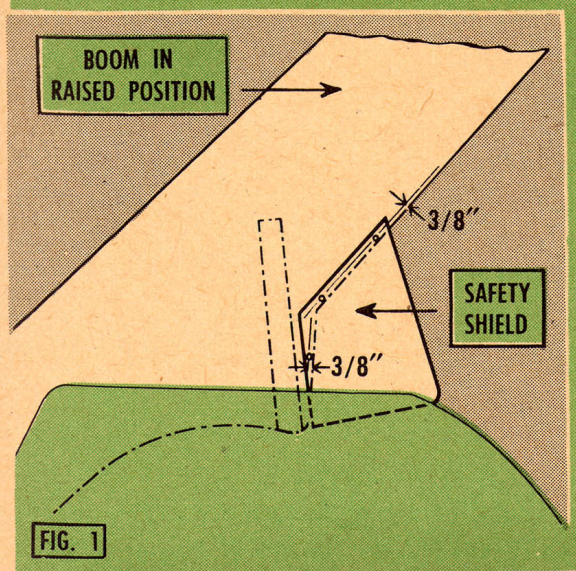


FIG. 1

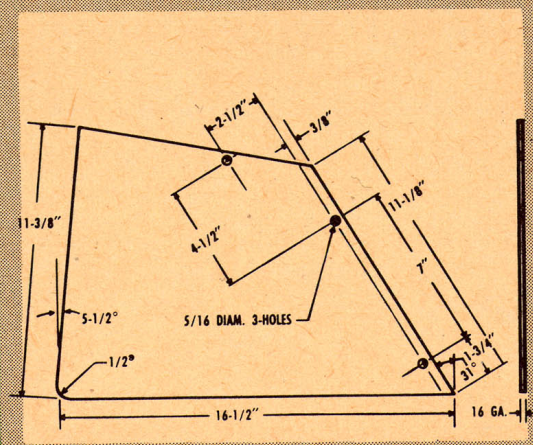
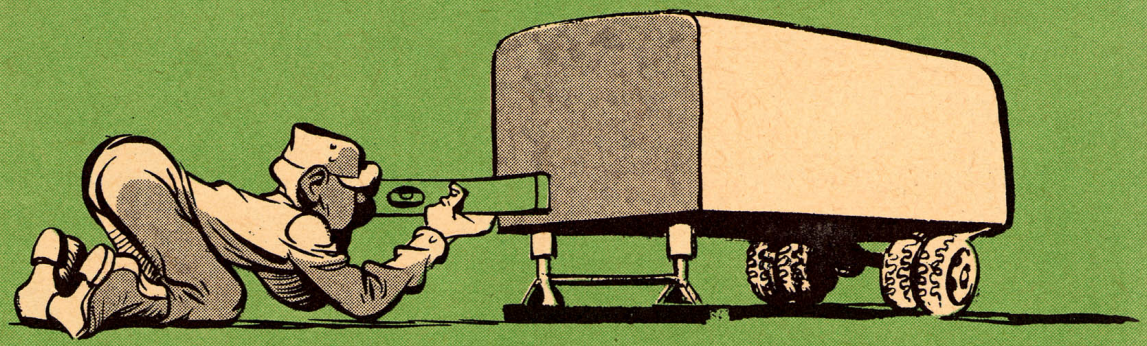


FIG. 2

How to level-up

HEAVY TRAILERS



Dear Half-Mast,

We had trouble hooking our tractor up to the semi-trailer, 12-ton, 4-wheel, Cargo, M127. If the trailer is loaded, or on soft or sandy ground, the supports don't hold the trailer up far enough to back the tractor under it. We took a 2½" oak board and bolted it to the bottom of the supports (Fig. 1) which gave us enough rise and also kept the trailer level on uneven ground.

We also had trouble with the tailgates being torn up faster than we could repair them. The gates wedge in the sockets and the fellas use picks, bars, or anything else they can get to pry them out. The prying tears the bottom board to pieces. We took ½" angle iron, long enough to go all the way across the bottom of the gate, and welded it to the metal supports to give a tough prying surface and save the gates.

Lt B. R. M.

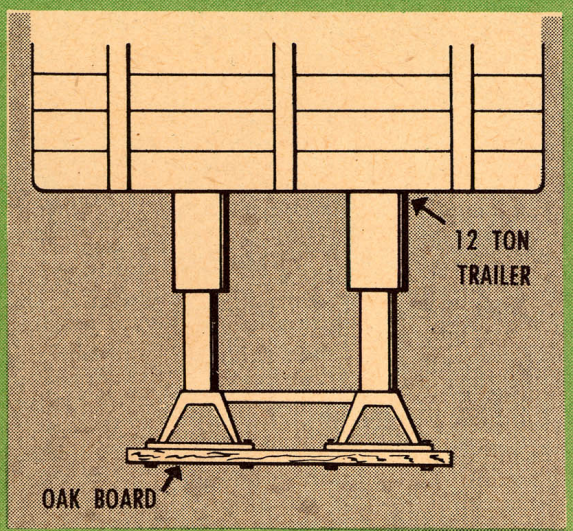


Fig. 1—To keep from getting bogged down, support your trailer supports with a plank.

Dear Lt B. R. M.,

Well, Sir, it sounds like you're keeping your trailer on the level and saving tailgates. But, as for that plank stretched across the bottom of your landing supports as a permanent fixture, I'm afraid you'll run into trouble. It would act like a road-scraper where the going's rough

and you have enough worry about clearing the supports with nothin' on their bottom. Best make it a removable plank, so it can be stowed when traveling.

If, on any of your 12-ton trailers, you're having trouble with the landing-support feet pivoting right out from under the supports when you land 'em on rough, hard terrain, here's a production fix you could try.

Take four pieces of angle iron 1½" x 1½" x ¼", 5⅜" long, and weld one to the front and back of each foot directly under and against the tubular section of the landing support (Fig. 2). These braces will stop the feet before they pivot far enough to undermine the supports.

For another production fix on the tailgates, how about just welding stops on the gate posts so they're less likely to wedge in their sockets (Fig. 3). The stops would also give you prying surface if you need it. Looks like it would be easier than running angle iron along the bottom board of each gate—and that's a lot of iron too.

Half-Mast

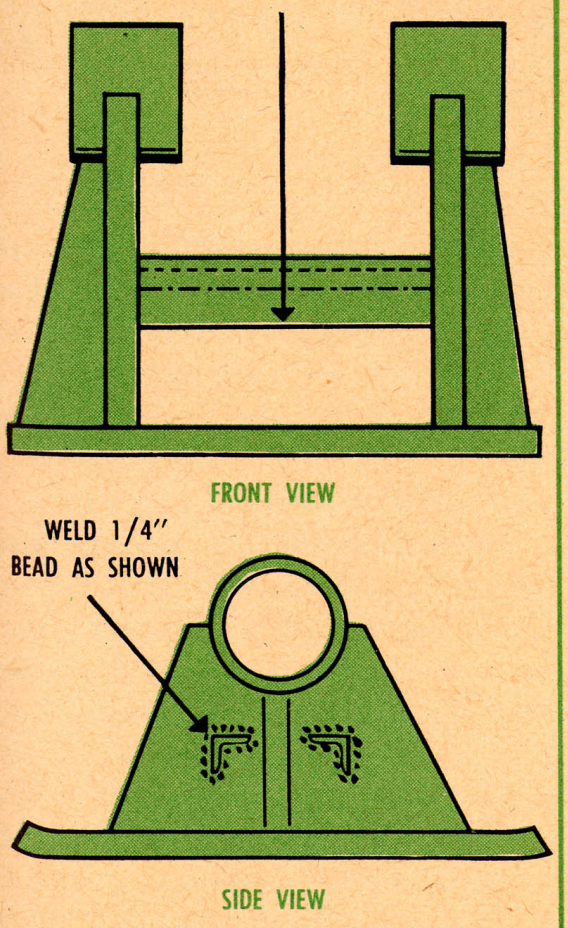


Fig. 2—A small piece of angle iron will keep your trailer support feet in place.

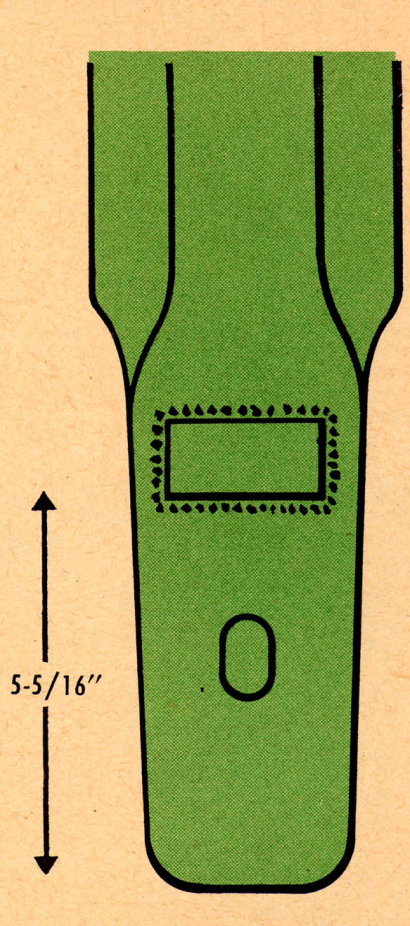
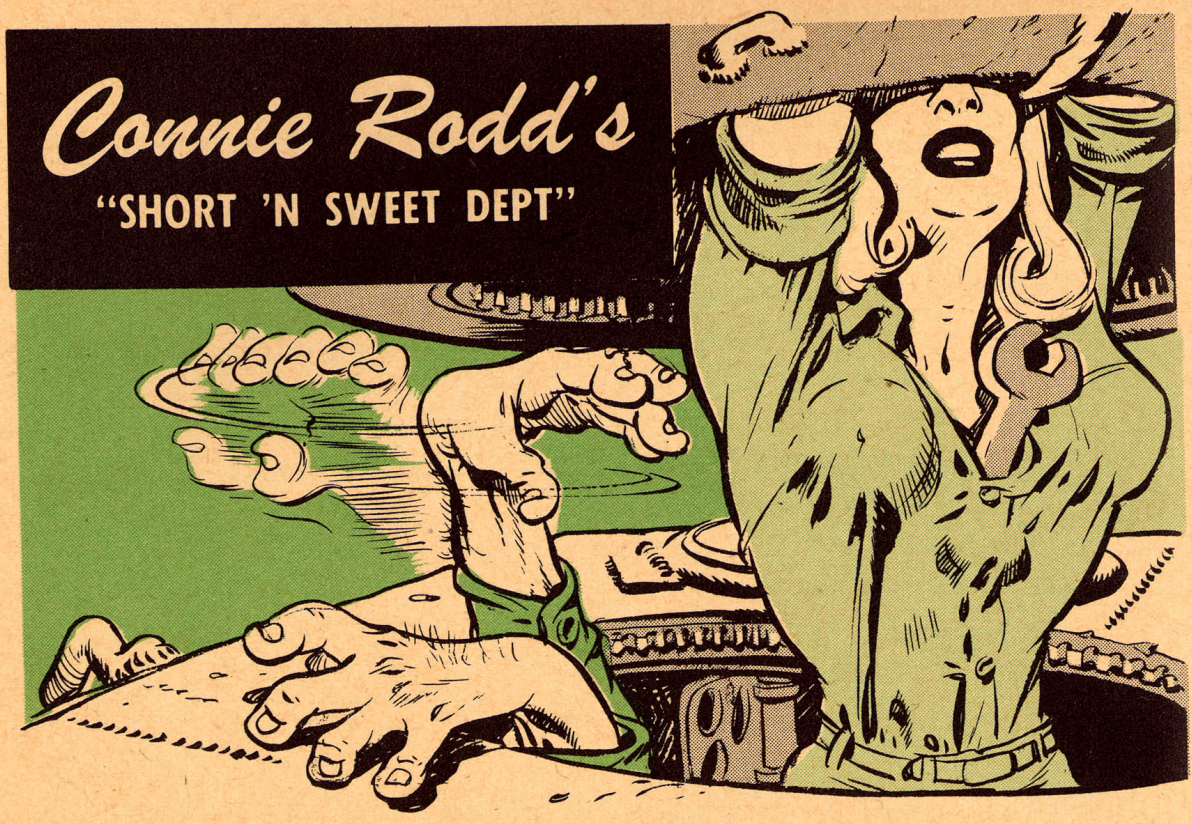


Fig. 3—A little metal, and a little weld puts a stop on those wedging tailgates.

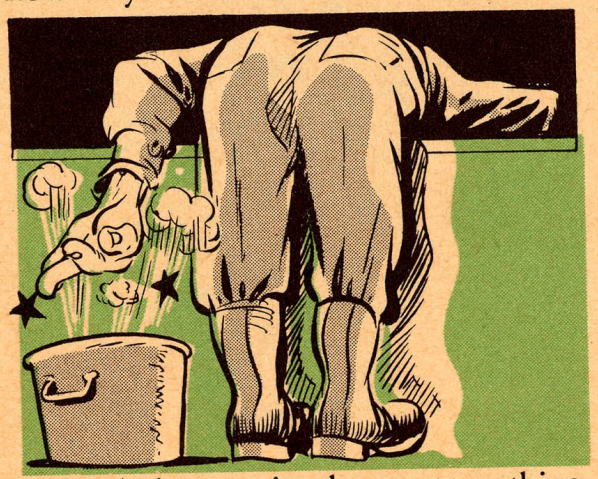
Connie Rodd's

"SHORT 'N SWEET DEPT"



Capacitors only

If you've been tossing burned-out capacitors-with-leads over your left shoulder while your right hand searches for the customary replacement, now's the time to change the habit. It'll be any day now that your requisition gets you capacitors only. No more leads attached.



When the capacitor burns out, nothing happens to the wire, anyway. Just snip the lead close to the capacitor, peel back a little insulation, and crimp or solder a terminal on the bare end. If there isn't a terminal available, wind the naked wire around the screw in the new capacitor.

As a matter of fact, the capacitor you think is a special deal probably has a good substitute in a standard item—what you're waiting for on requisition is maybe right in your own backyard.

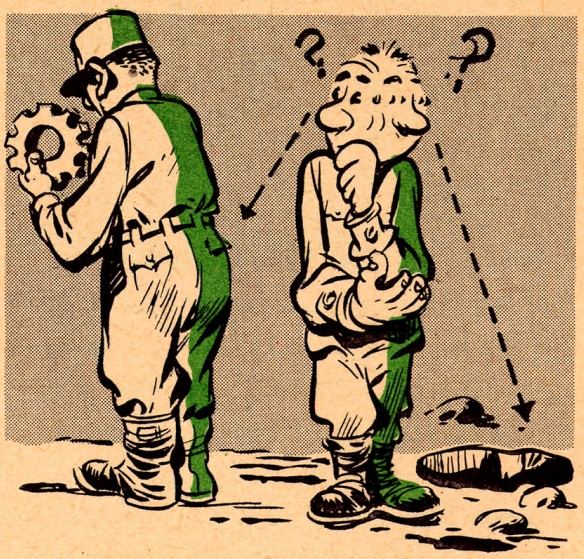
The first capacitors to get this economy pinch happen to be used with the turret control-box on M4A3 medium tanks—but tomorrow it might be another capacitor and another location and another vehicle. This business of exhausting stock on capacitors-with-leads and replacing them with a standard item capacitor is being done wherever possible. So consider yourself alerted, and check your bulk supply of lead wire and terminals.

Mixed gears

If you can't tell third base from a hole in the ground, you might have trouble in identifying gears as shown in TB Ord 514 dealing with serviceability standards for axle drive gears.

Somebody's gears were mixed so the pix are switched. The descriptions under illustrations #2 and #3 should be exchanged. Correctly, #2 is spiral bevel gear and #3 is spur gear.

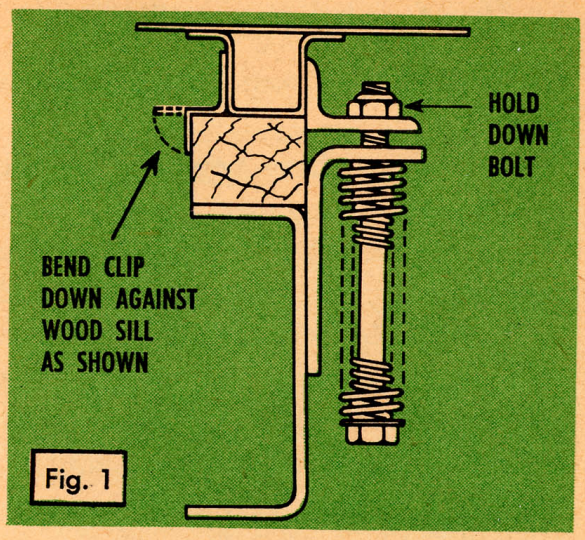
Confusin' but not amoozin'.



Clamp the clips

Somewhere along the line a batch of retaining clips that are on the wood spacers under the cargo body of your M135, 2½-ton, 6x6 trucks didn't get clamped down.

These spacers are the two wood sills which run lengthwise under the cargo body on top of the trucks' main frame. When you crawl under you'll see that four retaining-clips have been welded to the cargo body above each spacer but may not have been bent down. They're there to keep the spacers from slipping.



If the spacers haven't shifted, do yourself a favor and tap the retaining clips down with a hammer before they do. They'll hold fine (Fig. 1).

But if the spacers have shifted, you'll have to loosen the hold-down bolts, jack the body up and drive the spacers back in place. Then bolt 'em down tight and bend down the clips.

If a spacer comes out, even on only one end, it'll probably commit mayhem on your body's underbelly. The spacers are in there to cushion the body against the main frame in rough going. Along with the springs on the hold-down bolts, they let the cargo body roll with roadbed punches.

Winch caution plate

Here's news for the boys who tighten down the truck winch safety-brake adjusting-bolt till she busts a button.

Ordnance is installing a caution plate on the winch-brake-case cover of some trucks about how tight to turn the bolt.

So, if you have a truck around without a caution plate on its winch, see if Ordnance can put the plate on for you.

Just water—not acid

The only drink your batteries need is water.

Some people have been tipping the apple cart by giving them a swig of acid; that is not according to Hoyle, because batteries that you get have already had their dose. The only time acid is added to a battery is when it's received from the depot dry-charged or when a battery **expert** decides it needs some. Ordnance takes care of that for you. If you haphazardly add more sulphuric acid you're upsetting the chemical balance of the cells, and it's bound to go flooey long before its time.

In case there's a jug of sulphuric acid around your motor pool or shop, to keep some joker from killing good batteries, paste a small sticker on it that says:

SULPHURIC ACID

CAUTION

not to be added to batteries

Hydraulic lube

Been puzzling over what kind of oil goes in the hydraulic system of your M51 Dump? The higher echelon TM 9-1837D (Jan 53) says it's hydraulic oil, petroleum base (OHA).

But, if you try to get petroleum base oil and find yourself up the creek, use seasonal grade OE. Same that's given in the M47 2½-ton dump LO — it'll save your hyd.

How much . . . it holds 37 qts. When you're filling or checking, take a good reading on the reservoir oil-level-gage and get the levels at the proper marks (Fig. 2) to be sure you're safe.

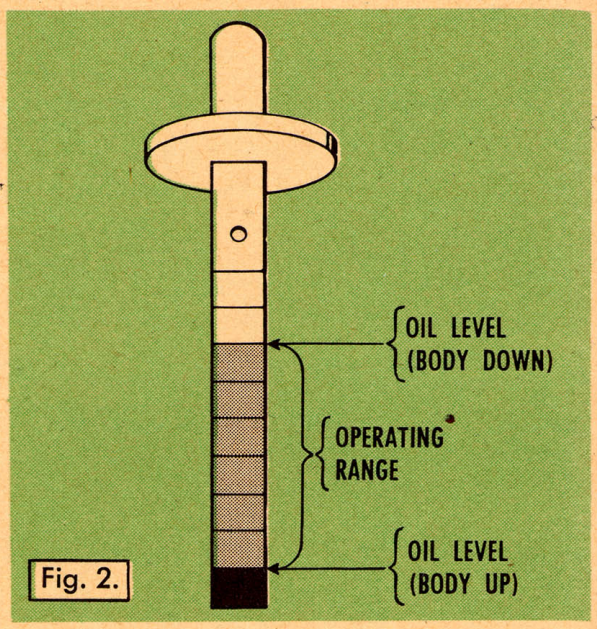


Fig. 2.

Overfilling builds up about a 20 lb excess pressure that has nowhere to go because the system isn't vented. But it finds a place to go when you remove the filler cap—which can be dangerous. So remove the filler cap slowly to allow gradual escape of any excess pressure.

Hoist need a boot?

You been wondering why a rubber boot was added to the hoist control valve spool on the M47 dump?

Yep—Just like a Band-Aid keeps dirt out of a cut finger, this boot was put there to keep dust and corrosion from the exposed control valve shaft — 'specially when operating in dusty or sandy country.

You'll find these boots on M47's with serial No. 98758 to 100000 inclusive and on 'em all after serial No. 107874.

If you're picking up and dumping your load in the dusty, sandy country, better check to see if your vehicle needs this rubber boot (Stock No. G742-8329894) to keep things clean.

Trip ticket holder

Credit some brain in the 1st Army for this one. Whenever a driver gets the key to an administrative vehicle from the dispatcher, he gets a little plastic and fabric envelope chained right to it (Fig. 3). This envelope is about the right size to hold the trip ticket folded once, and keeps it from getting lost or mussed up on the trip, and saves confusion when all the drivers come in for their regular runs at work call.

The plastic face lets everyone read off the vehicle number and the driver's name without taking the ticket out of the envelope, and if an Off Post stamp is needed, it too is put where it can be seen through the acetate.

These envelopes can be run up in a few minutes by the upholstery shop, from scrap materials. The acetate is the same as is used for map overlays.

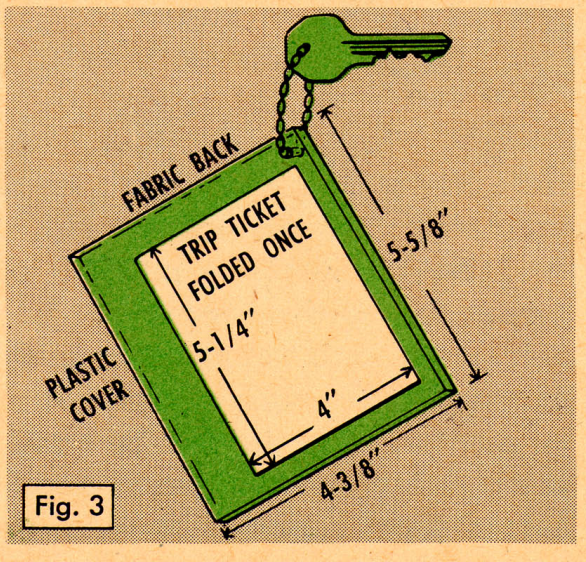


Fig. 3

New angled creeper

Some unsung genius in the Fort Belvoir Ordnance shops got tired of using a conventional creeper under the higher military vehicles. He had to hold his head up to see, but didn't have room to sit up. So he made a gismo that raised his head about 10" and has a piece of sheet metal to give him a back rest. He made it so it can be removed when not needed. Looks like (Fig. 4):

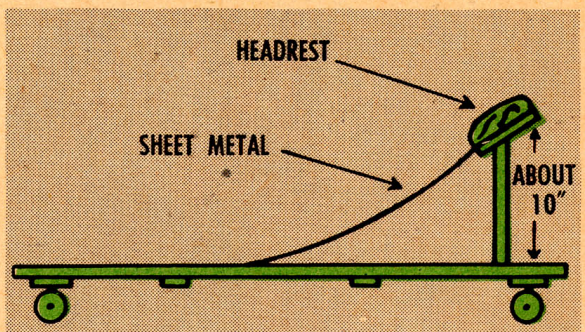


Fig. 4

Weight correction

The road weights for the ¾-ton M37, shown on page 9, TM 9-840, are really "curb weights" in round figures, because they include full equipment, personnel, and cross country payload. The Vehicle's Weight and Dimension Data Plate has the correct figures for road weights (which, of course, does not include weight of personnel).

W/Winch

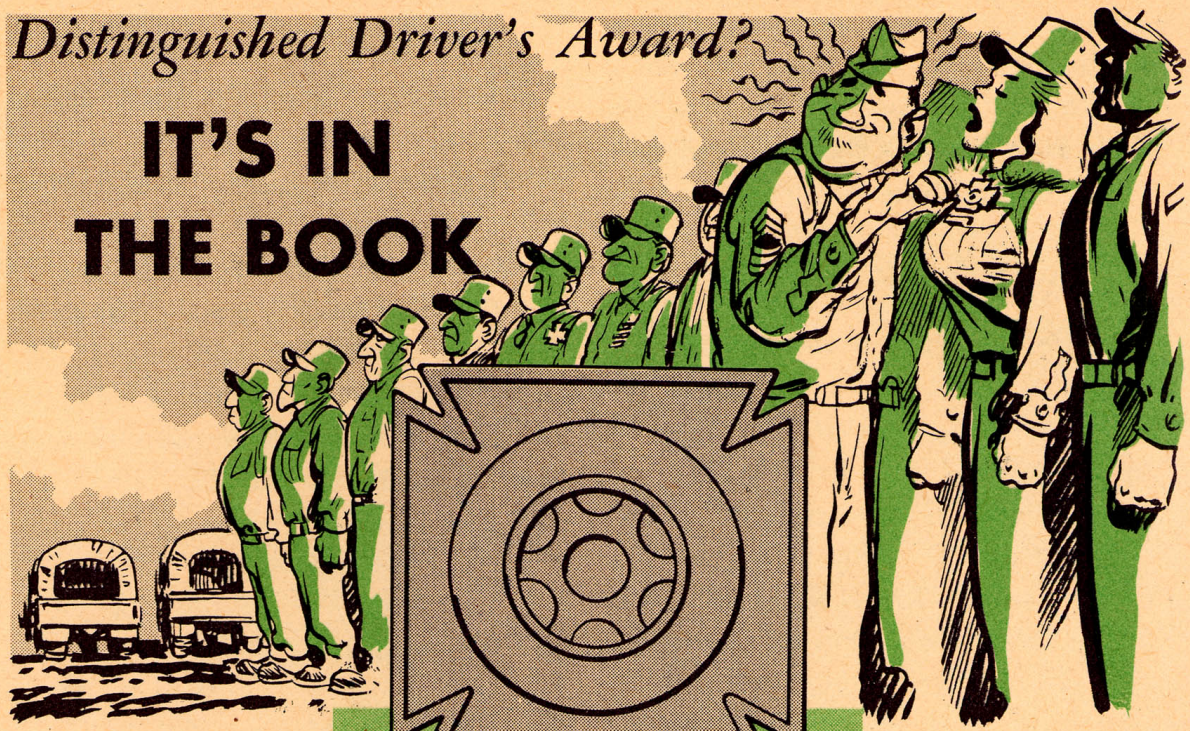
Empty	5917 lbs.
Cross-Country	7417 lbs.
Highway	7917 lbs.

W/O Winch

Empty	5687 lbs.
Cross-Country	7187 lbs.
Highway	7687 lbs.

Distinguished Driver's Award?

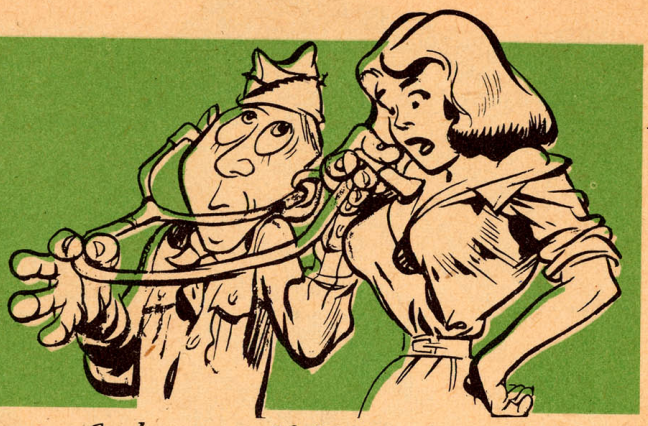
IT'S IN THE BOOK



Every now and then faint, plaintive cries are heard from the back country to the effect that everybody gets to wear a nice, shiny badge but the driver, and that poor guy who does all the hard, day-in, day-out work to keep 'em rolling, the motor mechanic. The infantryman gets his long rifle, the combat medic gets his wreathed stretcher...so how can a top-flight truck-jockey or wrench-juggler show that he knows his stuff?

Simple, friends. Just take a long look at par 24, Sec. III, AR 600-70. There's the solid, shiny reward for the driver or mechanic who's proved he knows whereof he speaks. It's in the book, so you motor officers who want to show that hard work really does pay off, here's your cue. And you first-class drivers and mechanics . . . maybe your motor officers have been too busy doing their jobs to have thumbed through their regulations. You could remind them. And don't make the mistake of under-rating the Motor Vehicle Driver's (and/or Mechanic's) Badge. To wear one, you've got to be plenty good, because the qualifications are high and fender-benders need not apply.

WHAT'S THAT KNOCKING IN MY ENGINE?



Joyride Joey can spot a knock in an engine a mile away. When he hears a knock from one of the company jeeps, he yells something about "This *@/#!* Army gasoline!"

What Joey doesn't know is that gasoline probably isn't the trouble. Several other things can make an engine knock. Some of these you can't control, others you can.

You can't do anything about these:

Humidity—did you ever notice how much quieter your Old Chevy runs in a rain than in dry weather?

Temperature—You are more likely to get a knock in hot weather than in cooler, due to higher engine temperature.

Elevation—Some gasolines will take you through the mountains nice and quiet-like, but down at the seashore will make your engine sound like a jackhammer.

You **can** do something about these:

Engine temperature—Knock can come from an engine that gets too hot because of a clogged radiator, faulty thermostat, bad pump or loose fan-belt.

Carbon—An engine that's fouled-up with carbon may give a knock.

Carburetor—If it's set for too lean a mixture, you may get a knock.

Distributor setting—Knock can come from a spark that's advanced too far. And you'll also lose power. Too—the advance mechanism may be out of kilter.

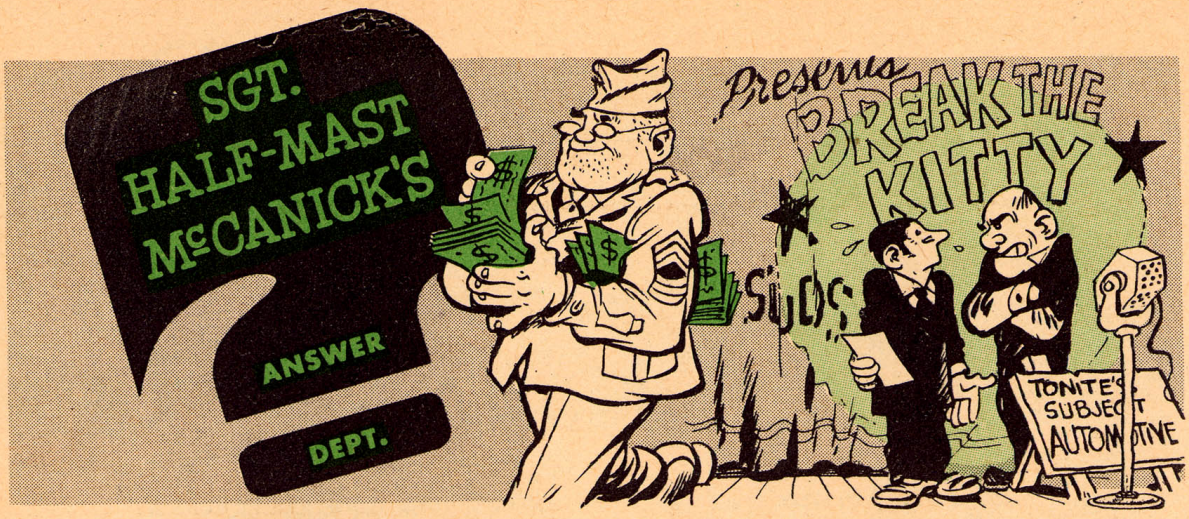
Driver habits—The driver who accelerates with the gas pedal jammed to the floorboard is asking for knocks. Also, the lug who lugs the engine down to its next-to-the-last gasp before shifting gears will hear pounding in his head—he **should** hear pounding on his head.

Kind of driving—Extremely slow speed driving on the post or in town is likely to cause accumulation of carbon deposits which may help to develop knock.

Now—What can you do about it?

Get yourself an engine check, including the carburetor, distributor, plugs and cooling system. When she's tuned up the rest is up to you. Avoid long engine idle periods. They cause carbon formation in the combustion chambers. The main thing is to watch your driving habits. Avoid jackrabbit starts. Select the right gear for your load and speed. Watch the tachometer (if you have one).

The right kind of driving will knock most engine knocks right out of your head.



TRAILER TIRE PRESSURES

Dear Half-Mast,

We're on the receiving end of these questions:

Why are the tire pressures unequal on the truck, ¼-ton M38 and the trailer, ¼-ton M100? Tire sizes are the same and it is required that the spare be used for either. How would you use the jeep spare on the trailer with its 28 psi? Do you know the answers?

Maj A. P. D.

Dear Maj A. P. D.,

Well, Sir, they don't call me the Answer-Man for nothing. The 28 psi prescribed for the M38 in TM 9-804 has been changed to 25 psi by Change 3 (10 Apr 53) to the TM. And Change 1 (1 Apr 53) to TM 9-871A sets the tire pressure for the M100 trailer at the same figure—25 psi. So let out the extra air and you'll stop all the questions.

This 25 psi pressure for ¼-ton truck and trailer tires applies to both highway and cross-country operation. You reduce it by 10 psi when you're rolling in mud, sand, or snow.

Half-Mast

STEERING ARM

Dear Half-Mast,

What is the score on the bushing in the steering idler arm on our M37's and other Dodge vehicles? We are wearing out quite a few of them, and can't find any listing in our Ord 7 SNL G-741. We took the matter up with our Field Maintenance Unit, and they couldn't get it either, but did give us a whole new arm. It seems silly to replace the whole arm when the bushing is all we need.

WO McC

Dear Mr. Mc C.,

You did just right when you had the whole steering idler arm on your M37 replaced. You could have drawn one yourself, 'cause it's right there on page 69 of your Ord 7, SNL G-741 (May 52). "ARM, idler, w/BALLS and BEARING, assy (integral) FSN G741-7374765." You don't carry any stock on this, but you can get it when you need it. After all, a loose bushing gives lots of warning before it is completely unserviceable.

I looked back to see just where the bushing for this arm did show up, and

it's on the Depot stock. The idea is this, the arm you replace is not thrown away, it's sent back to the Depot where they have the tools to do a precision repair job.

By the way, you want to be sure to get the "SHAFT, idler arm," G741-7373786 which is the first item on page 70 of the Ord 7, SNL G-741 to replace at the same time, so your new arm will last longer.

Half-Mast

SEDAN MIRRORS

Dear Half-Mast,

We drive our sedans as much as 250 miles a day in a good sized metropolitan area with numerous boulevards, one-way streets and highways, some of which are up to six lanes wide, without the aid of outside rear-view mirrors. Crossing lanes without mirrors is nerve-racking and hazardous because of blind spots.

The boys who drive our sedans feel they should have outside rear-view mirrors to prevent any possible accidents, but we can't seem to find any directive that authorizes us to requisition mirrors. Can you help us on this?

Sgt G. L. D.

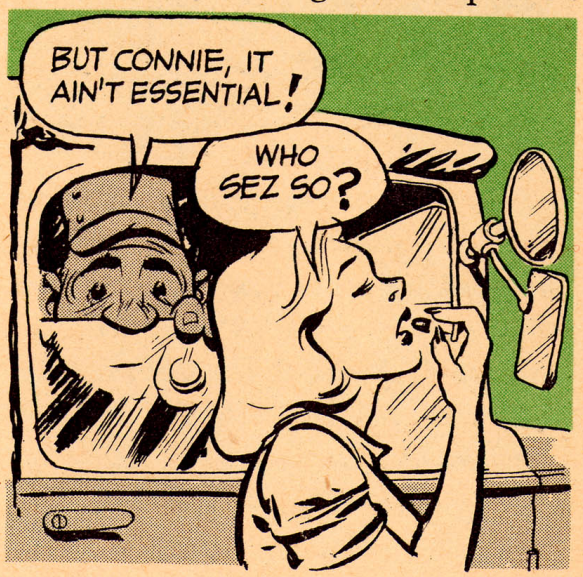
Dear Sgt G. L. D.,

Yours is a tough nut . . . outside rear view mirrors are classified as accessories, and SR-715-110-50 gives all instructions on how to get accessories on local purchase.

But here's the tough part—an order has gone out to Class I installations saying that non-essential accessories such as grill guards, outside rear-view mirrors, windshield washers, back-up lights and emergency brake warning lights are not authorized for procurement.

The order goes on to say, "a non-essential accessory is one that is not important to the highest degree and not indispensable to the comfort and safety of human beings and/or proper operation of the vehicle in question."

So Sarge, if you can convince your old man that **your** mirrors are essential, maybe he'll be able to get them authorized by writing to the depot and



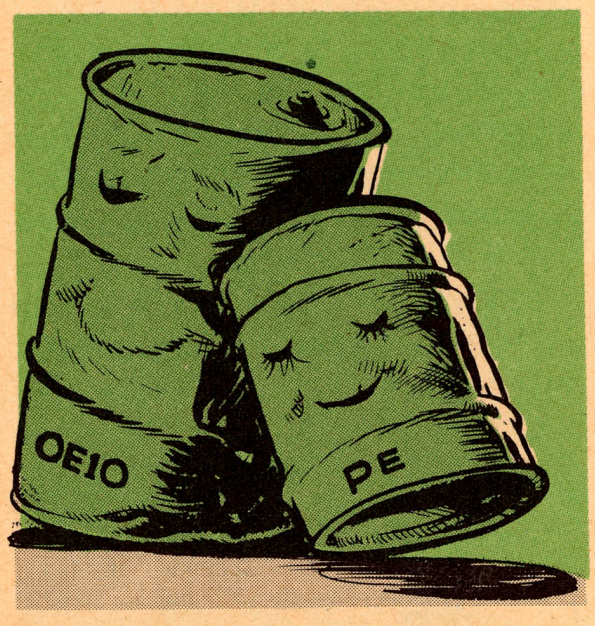
quoting Ordnance letter (OCI) 33113, dated 1 Dec 49, that says "an adequate field of view to the rear, provided by rear view mirrors is a safety requirement." Or else you could buy them yourself.

Half-Mast

PE VERSUS OE-10

Dear Half-Mast,

There is considerable discussion here as to the compatibility of Oil Engine (OE 10, Spec, Mil-O-2104) and Engine Oil Preservative (PE, Spec US Army 2-126).



This has come up because the new Allison cross-drive transmissions that we get in our tanks have PE 10 in them and we are in doubt as to whether it's better to flush the PE from the transmission before refilling with OE 10 or is it sufficient to drain and refill?

Can you straighten us out on this?

Mr. W. A. M.

Dear Mr. W. A. M.,

Sure can . . . those two oils are compatible because basically they are the same. PE is just OE 10 into which a preservative formula has been added.

As for flushing preservative oil from your new Allison transmissions, it isn't necessary because the amount of PE that remains in the coolers, lines and transmission will do no harm when they're mixed. If you did flush out the transmission, the flushing compound might get in the torque converter and it's impossible to drain the torque converter without completely disassembling. So don't flush—just drain 'n refill.

Half-Mast

SPINNING WHEELS

Dear Sgt Half-Mast,

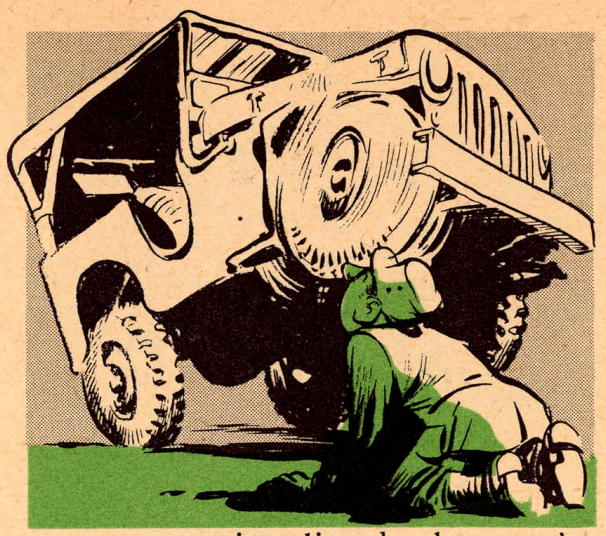
Could you tell me why my ¼-ton truck's front wheels have a tendency to continue turning when I jack it up? Does it have any harmful effects on the vehicle?

Sgt R. L. D.

Dear Sgt R. L. D.,

Sounds like your front axle drive is engaged at the wrong time. This could damage the drive mechanism—especially the gears and bearings—not to mention its effect on the tires.

When the front drive is used on hard surface roads under normal conditions, torque builds up in the power train, and when the vehicle is lifted causes the wheels to turn a little. This wind-up isn't as likely over rough roads be-



cause torque is relieved when you're bouncing over that kind of terrain.

Like it says on page 18 of TM 9-804: The front drive should be used "only in off-the-road operation, slippery roads, steep grades, or during hard pulling and deep water fording."

Half-Mast

2-CYCLE OR 4-CYCLE

Dear Half-Mast,

I was taught that the M46 tank has a four-stroke two-cycle engine. The manual calls it a four-cycle engine. The people I talked to around here say it's just considered a four-cycle engine but actually it has only four strokes and two cycles.

Can you set me straight on this?

Sgt T. S. H.

Dear Sgt T. S. H.,

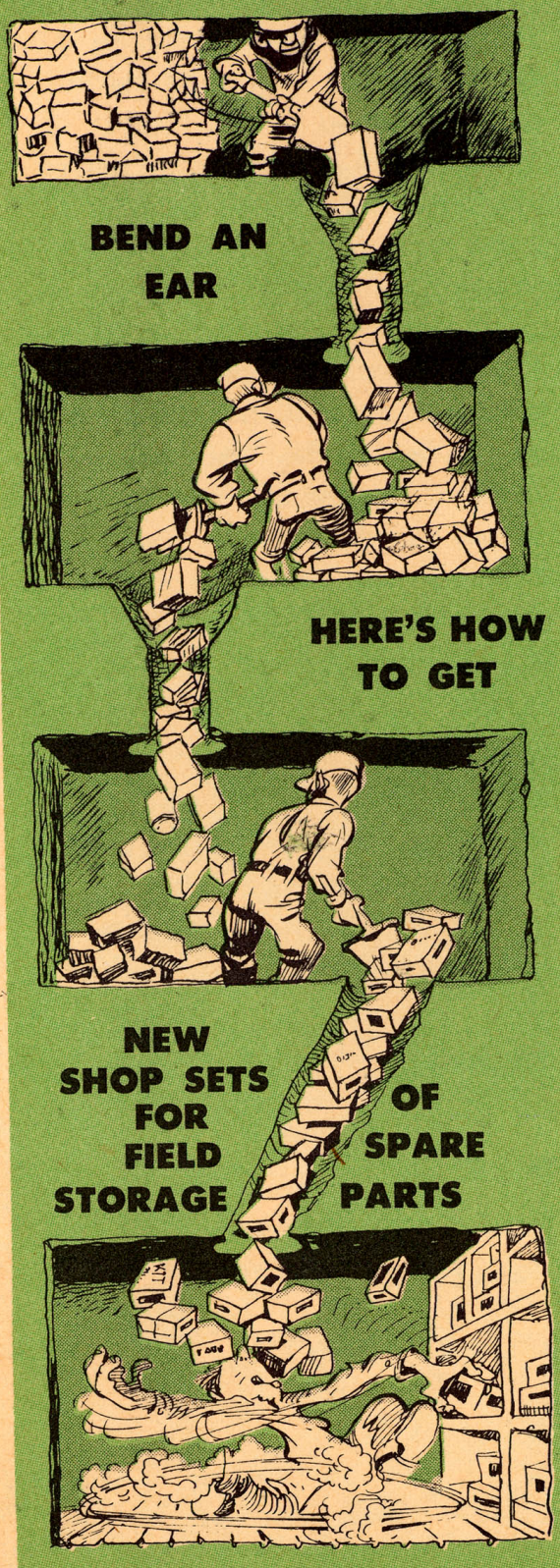
Sure can . . . that engine in the M46 tank is an air cooled 4-cycle engine. You're confusing cycles and revolutions. An Otto 4-cycle engine (named for the guy who invented it) is our most common engine. It's the one that has four strokes—two revolutions—for each explosion. You know, intake, compression, power, and exhaust.

The 2-cycle engine fires every two strokes, or one revolution. This is done by having no valves and putting the new charge in at the bottom of the piston travel. The exhaust is driven out the other side of the cylinder at the same time. So—the up-stroke provides compression, and the spark sets off the power stroke near top dead-center.

About the only 2-cycle engines you'll find today are in outboard motors, some little motorcycles and power lawn mowers. In general, if you have to mix the oil and the gasoline, you're dealing with a 2-cycle job. If the oil goes into a crankcase, it's a 4-cycle job. For more dope on automotive principles dig out TM 9-2700. It covers the subject well.

Sarge, stick to your manual. It's your best bet for basic info.

SUPPLY & DIRECTIVES



If you've had trouble getting Shop Sets #1 and #2 for field storage of spare parts, lend an ear. Here's the latest dope.

The Supply folks at Rossford Ordnance Depot say that these shop sets are brand new. They replace Sets "C" and "D", Stock No. 41-O-4000 and Stock No. 41-O-4500 respectively. The old jobs listed in Parts 2 and 3 of Ord 6, SNL N-21, have been declared obsolete and canceled.

Instead of Ordnance Maintenance Set "C", you now order Shop Set, Field Maintenance, Spare Parts Storage, Set No. 1, Stock No. 41-S-2990-310.

The replacement for the "D" set is Shop Set, Field Maintenance, Spare Parts Storage, Set No. 2, Stock No. 41-S-2990-312.

If you want an idea of what these sets contain, look at the tables printed opposite. Remember—the Ordnance Corps is responsible for the initial issue of this set, including the components which are items from other technical services, like those hand lamps, f'rinstance. For replacements within the set, requisitions should go to the technical service concerned—in the case of the handlamp, to the Engineers.

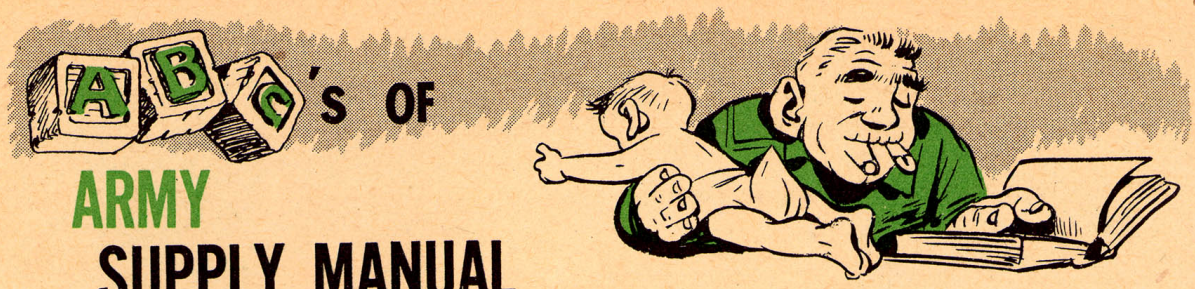
Either set can be mounted on any 2½-ton 6x6 truck with a flat cargo bed. The truck, of course, is your regular T/O&E vehicle.

SET NO. 1 STOCK NO. 41-S-2990-310

STOCK NO.	NOMENCLATURE	QUANTITY
41-C-13	CABINET, spare parts, S, Type II, Class A, with equipment.	5
41-C-13-25	CABINET, spare parts, S, Type II, Class B, with equipment.	1
41-C-12	CABINET, spare parts, and tools, S, Type I, Class A.	2
ENGR. 17-6625.500-250	LAMP, electric trouble with medium screw socket, lamp guard with reflector and hook, handle with switch, standard parallel blade plug and 2 conductor, rubber covered, NEC type S, No. 16 AWG cord, without lamp, 25 feet long. (formerly 17-C-35080-30.)	2
ENGR. 17-2200.200-006	CABLE, power, 2 conductor, No. 12 AWG, NEC Type S, 25 feet cable length, with 2 pole male plug one end, and combination 2 pole 2 blade female receptacle other end, OS 12-12; Ordnance Drawing C145726. (formerly 17-C-35081.)	2
ENGR. 17-2200.200-008	CABLE, power, 2 conductor, No. 12 AWG, NEC Type S, 50 feet cable length, with 2 pole male plug one end and combination 2 pole and 2 blade female receptacle other end, OS 12-12; Ordnance Drawing C145726. (formerly 17-C-35092.)	3
ENGR. 58-4276.300-003	EXTINGUISHER, fire CTC, hand type, capacity 1 qt. w/bracket. (formerly 58-E-202.)	1
H020-5700994	KIT, hardware, for Shop Set, Field Maintenance, Spare Parts Storage, Set No. 1.	1
17-P-3727	PLUG, attachment, dbl outlet, non-watertight.	4
17-P-3726	PLUG, attachment, sgl outlet.	4

SET NO. 2 STOCK NO. 41-S-2990-312

STOCK NO.	NOMENCLATURE	QUANTITY
41-B-603	BIN, Type 1, Class A, empty.	2
41-C-12	CABINET, spare parts, and tools, S, Type I, Class A.	6
41-C-12-100	CABINET, spare parts, and tools, S, Type I, Class C.	2
41-C-28	CAGE, expanded metal, Type II, empty, height 32 inches, width 24½ in., depth 16¼ in.	2
ENGR. 17-2200.200-006	CABLE, power, 2 conductor, No. 12 AWG, NEC Type S, 25 feet cable length, with 2 pole male plug one end, and combination 2 pole 2 blade female receptacle other end, OS 12-12; Ordnance Drawing C145726. (formerly 17-C-35081.)	2
ENGR. 17-6625.500-250	LAMP, electric trouble with medium screw socket, lamp guard with reflector and hook, handle with switch, standard parallel blade plug and 2 conductor, rubber covered, NEC Type S, No. 16 AWG cord, without lamp, 25 feet long (formerly 17-C-35080-30.)	2
ENGR. 17-2200.200-008	CABLE, power, 2 conductor, No. 12 AWG, NEC Type S, 50 feet cable length, with 2 pole male plug one end and combination 2 pole and 2 blade female receptacle other end, OS 12-12; Ordnance Drawing C145726. (formerly 17-C-35092.)	3
ENGR. 58-4276.300-003	EXTINGUISHER, fire, CTC, hand type capacity 1 qt. w/bracket. (formerly 58-E-202.)	1
H020-5700995	KIT, hardware, for Shop Set, Field Maintenance, Spare Parts Storage, Set No. 2.	1
17-P-3727	PLUG, attachment, dbl outlet non-watertight.	4
17-P-3726	PLUG, attachment, sgl outlet.	4



'S OF ARMY SUPPLY MANUAL GROUPS

Get acquainted with your Ord letter and number groups and you won't have to guess where to find what you want when you want it.

LETTER GROUPS

A Group— Automatic guns (including automatic rifles, machine and submachine guns); aircraft machine guns and cannon (up to 40mm); mortars (up to 4.2″); related subcaliber equipment; automatic anti-aircraft materiel (up to and including 40mm).

B Group— Small arms, hand arms, semi-automatic rifles, pyrotechnic projectors, grenade and rocket launchers, bayonets, trench knives; arm chests, lockers and racks.

C Group—

Light and medium field artillery (including guns and howitzers from 57mm up to and including 155mm howitzers); aircraft cannon (over 40mm); pack artillery (including howitzers and carriages); pack load accessories, subcaliber mounts; aircraft artillery (including guns and airplane mounts); airborne artillery (including guns, howitzers and carriages).

D Group— Heavy field artillery (beginning with 155mm guns and 75mm anti-aircraft guns).

E Group— Seacoast artillery power plants.

F Group— Sighting and fire control equipment, lighting devices, time interval recorders, and watches.

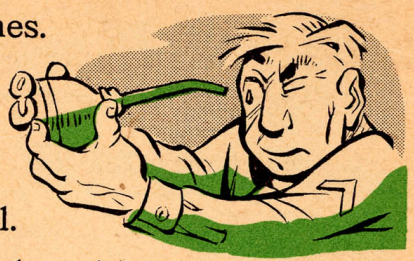
G Group— Automotive materiel.

H Group—

Standard common items including hardware; straps and leather piece material; electrical fittings and piece material; pipes, tubing, hoses and fittings; miscellaneous piece material (wires, ropes, threads, glass); ferrous and nonferrous metals (rods, bars, plates, strips, sheets and shapes); antifriction bearings; oil seals; tires, tubes and repairing materials; batteries; lubricatings fittings, oil filters, and elements.

J Group— Common tools and machines.

K Group— Cleaning, preserving, lubricating and welding materials.



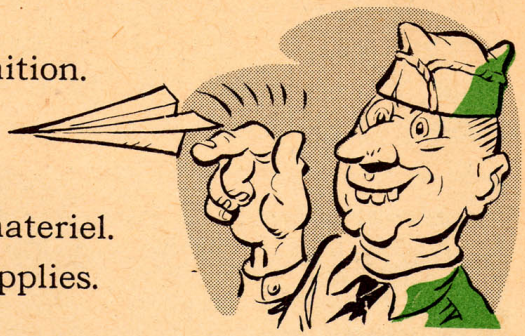
L Group— Targets and target materiel.

N Group— Ord unit tool, load and supply guides (not otherwise classified). N Group SNL's pertaining to T/O&E units will be canceled when the current information has been transferred to J Group SNL's.

P Group— Ammunition, fuzes and primers for medium and major caliber artillery, anti-aircraft artillery, and heavy field artillery.

R Group— Ammunition, fuzes and primers for minor and medium caliber field artillery and mortars, land mines, and demolition materials.

S Group— Bombs, mines, and torepdoes for aircraft; grenades, pyrotechnics, guided missiles and rockets including fuzes and primers.



T Group— Small arms ammunition.

U Group— Army aircraft.

Y Group— Guided missiles.

Z Group— Captured foreign materiel.

OGS Group— Obsolete general supplies.

NUMBER GROUPS

ORD 1—Introduction (Index is now being printed as SR 310-20-29)

ORD 3—List of current issue items—not a basis for requisitioning.

ORD 5—List of all items (Stock and Cross Reference Lists and Obsolete General Supplies).

ORD 6—Sets, kits and outfits.

ORD 7—Organizational maintenance allowances.

ORD 8—Field and depot maintenance allowances.

ORD 9—List of all service parts.

ORD 10—Ord unit tool, load and supply guides.

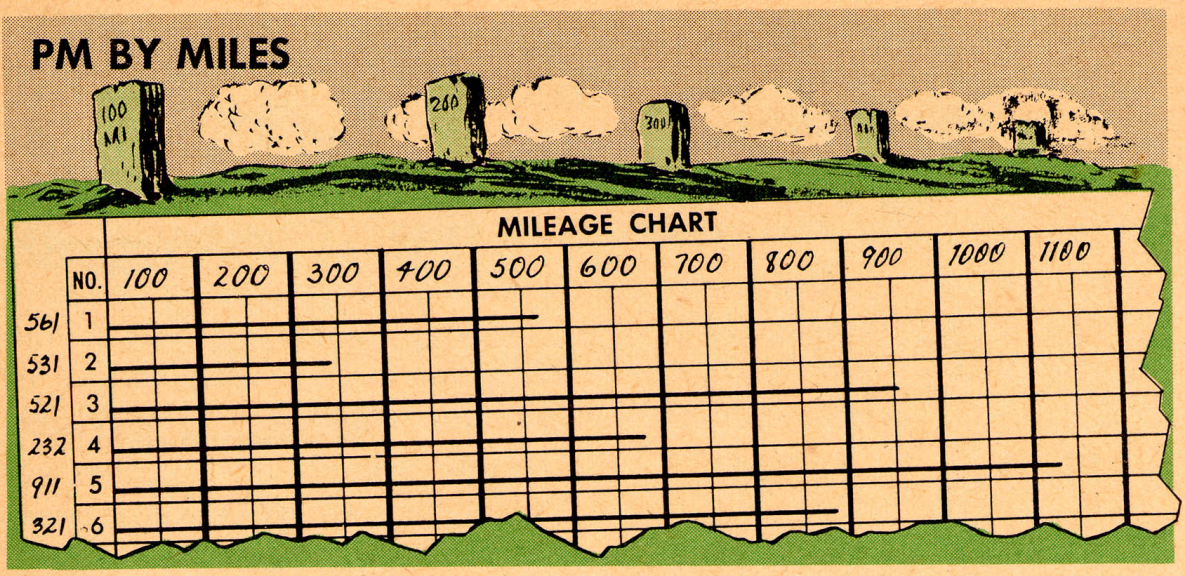
ORD 11—Ammunition (which is being converted to Ord 3 and Ord 5 manuals without changing the information or the Group letter and number.)

ORD 12—Obsolete General Supplies.

ORD 14—Interchangeability lists.

ORD 15—Cross reference lists.

ORD 16—Captured foreign materiel.



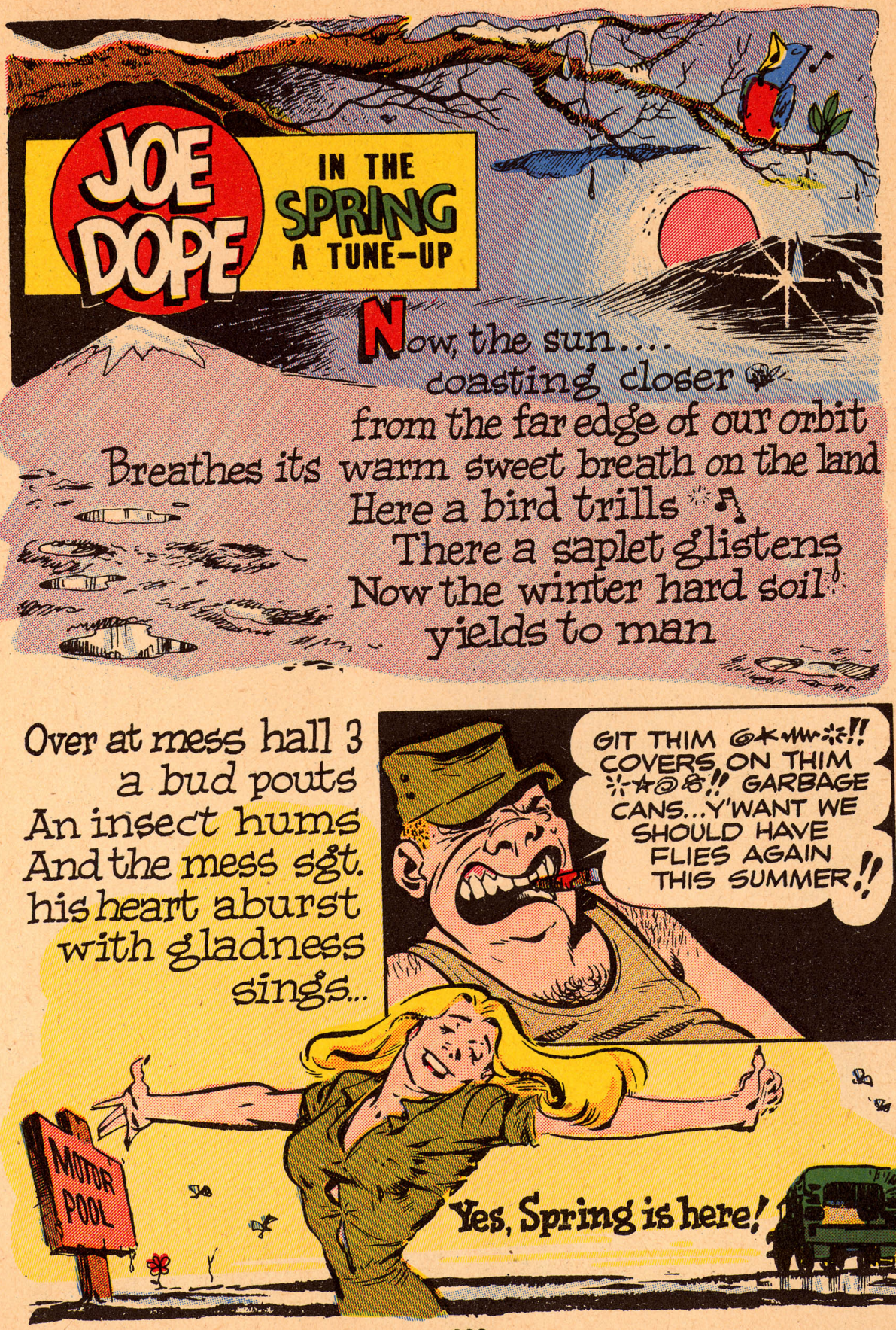
Is yours one of those on-the-go outfits with a batch of wheeled vehicles that need their 1000 mile services long before 60 days are up? Or with track jobs that do more than 250 miles every month? Are you having a rough time scheduling those babies for their PM needs? Well, fret no more because TM 9-2810 (Oct 53) gives a humdinger of a way to keep yourself posted on those specific gadabouts. Here's how it's done:

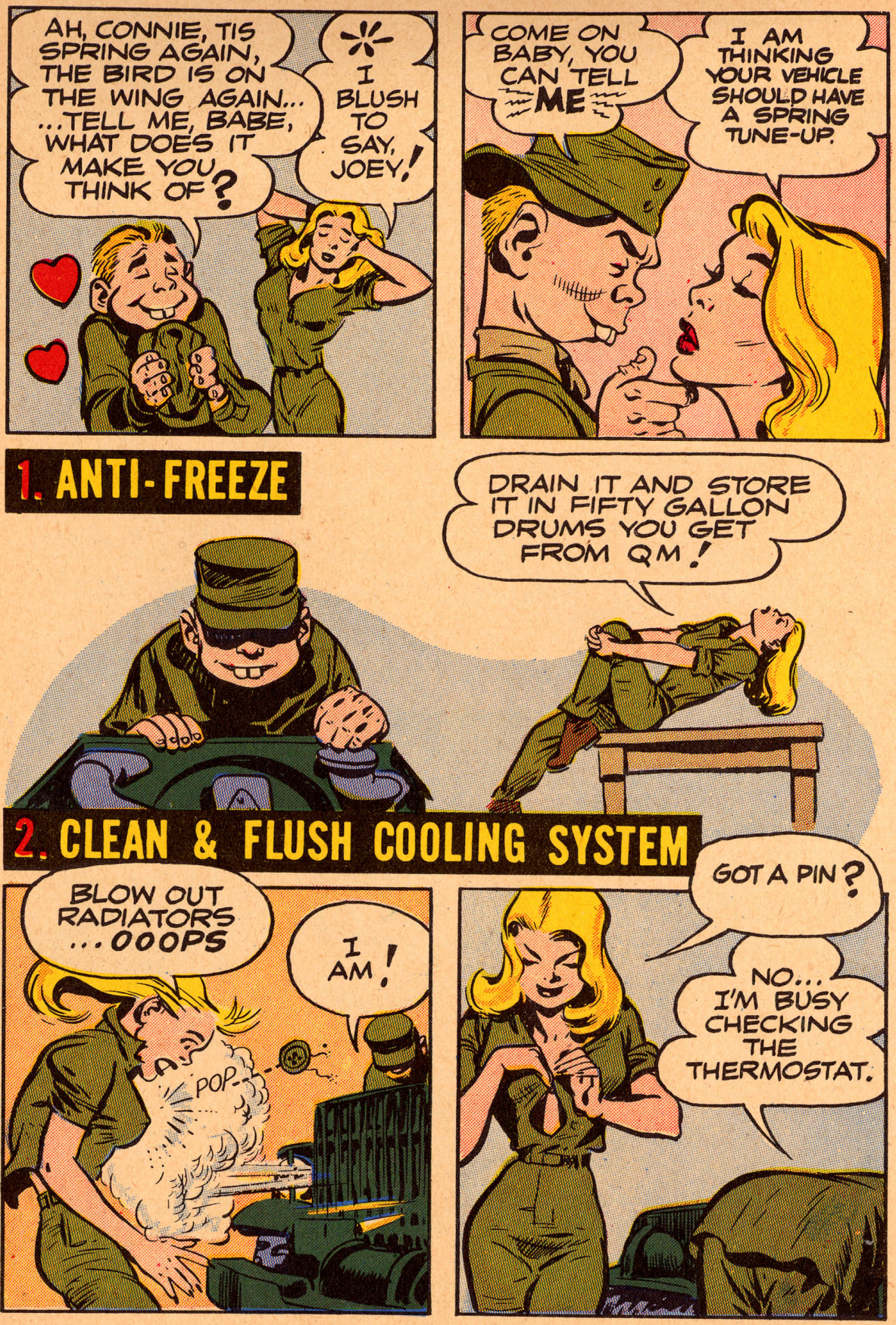
Take the right hand page of PM roster WD AGO 460 and improvise a mileage chart. Just line out the numbers across the top of the page and put miles instead—from 100 to 1100, allowing two spaces for every 100 miles, and down along the left numbered column list the last three digits of the vehicle's number. (If by chance you have some numbers that are alike, on those, put in the full number). The idea is to run a line out from the vehicle column and record its mileage.

As mileage is accumulated for each vehicle, draw a heavy line to the right. (Might enter your starting mileage for each vehicle in the 100 column if you want.) As the line comes within the 900-mile mark, then you can make your plans to call in the wheeled vehicles for their 1000-mile services. Like in the sample, wheeled vehicle on line #3 is entering the 950-mile zone—time to schedule even if the 60 days aren't up yet. And the one on line 5 is overdue. Planning in advance makes for a balanced work load and cuts down the gray hair.

This chart can be tacked up on the wall for quick reference; furthermore, sheets can be extended to go for the 6000-mile services if you want, then you can plan the PM services when the vehicle passes the 5700-mile mark.

Incidentally . . . when making those mileage inspections, you should be filling in the new DA 460 or 461 forms. SR 750-125-5 and PS #16 give a good run-down on how they're to be used.


JOE DOPE
IN THE SPRING A TUNE-UP
Now, the sun....
coasting closer
from the far edge of our orbit
Breathes its warm sweet breath on the land
Here a bird trills
There a saplet glistens
Now the winter hard soil
yields to man
Over at mess hall 3
a bud pouts
An insect hums
And the mess sgt.
his heart aburst
with gladness
sings...
GIT THIM @*~~*!! COVERS ON THIM *-*@&!! GARBAGE CANS...Y'WANT WE SHOULD HAVE FLIES AGAIN THIS SUMMER!!
MOTOR POOL
Yes, Spring is here!


AH, CONNIE, TIS SPRING AGAIN, THE BIRD IS ON THE WING AGAIN... ...TELL ME, BABE, WHAT DOES IT MAKE YOU THINK OF?
I BLUSH TO SAY, JOEY!
COME ON BABY, YOU CAN TELL ME
I AM THINKING YOUR VEHICLE SHOULD HAVE A SPRING TUNE-UP.
1. ANTI-FREEZE
DRAIN IT AND STORE IT IN FIFTY GALLON DRUMS YOU GET FROM QM!
2. CLEAN & FLUSH COOLING SYSTEM
BLOW OUT RADIATORS ...OOOPS
I AM!
POP
GOT A PIN?
NO... I'M BUSY CHECKING THE THERMOSTAT.

WHAT IF TH' VEHICLE HAS BEEN WINTERIZED AND IS EQUIPPED WITH A POWER HEATER?
THEN DO THE FOLLOWING....
FIRST... CLOSE SHUT-OFF COCK CONTROLLING CIRCULATION OF COOLANT THROUGH BATTERY HEATER PAD AND ENGINE HEATER
DO THIS AFTER ENGINE HAS BEEN FLUSHED!
THEN... DISCONNECT ONE END OF THE TWO COOLANT HOSES.
...AND TAPE IT FIRMLY NEARBY SO IT'LL BE READY FOR NEXT WINTER.
3. GIVE IT A WASHING
AND WHILE YOU'RE DOING THAT... I'LL I'LL TACK UP THIS POSTER.

WE HAVE THE WORLD'S BEST EQU

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JOE'S Dope Sheet

The army can give you the rules
Fine machines and plenty of tools
But you gotta pay heed
To the use of your steed
Use your head like they teach you in the schools.

WE HAVE THE WORLD'S BEST EQUIPMENT...Take care of it

PRODUCED UNDER SPECIAL LICENSE TO U. S. DEPT. DEFENSE COPR. 1954 WILL EISNER PRODUCTIONS

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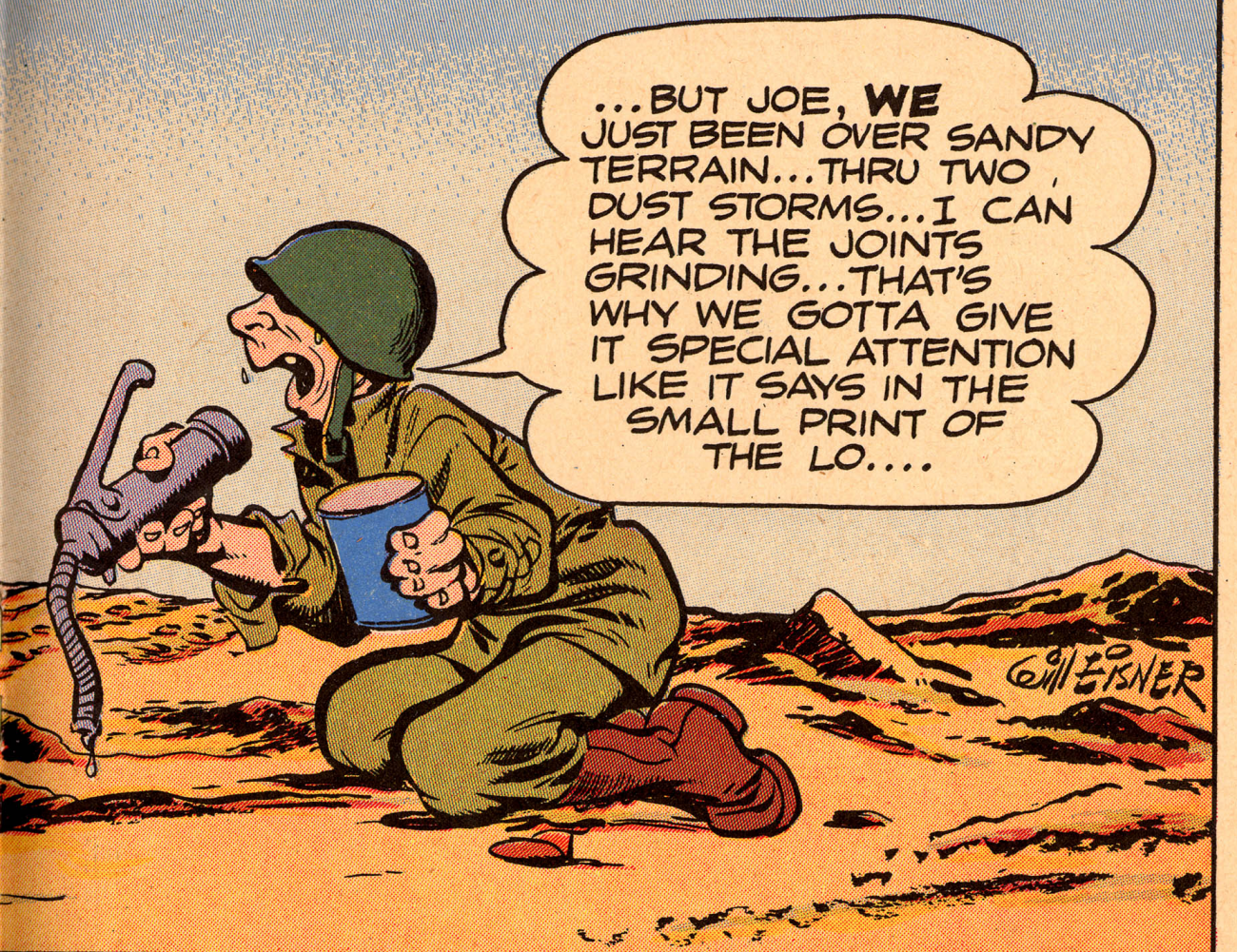
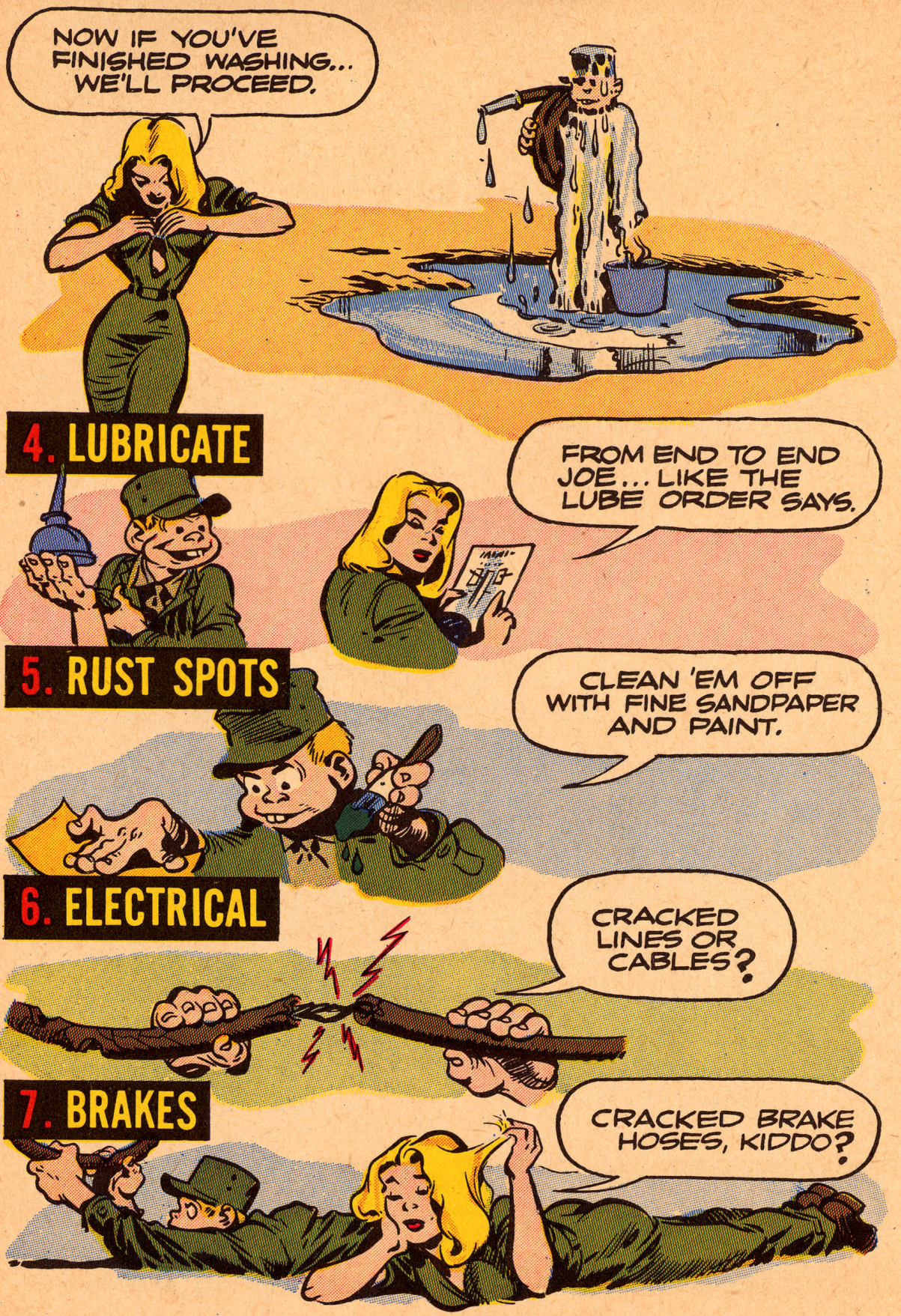
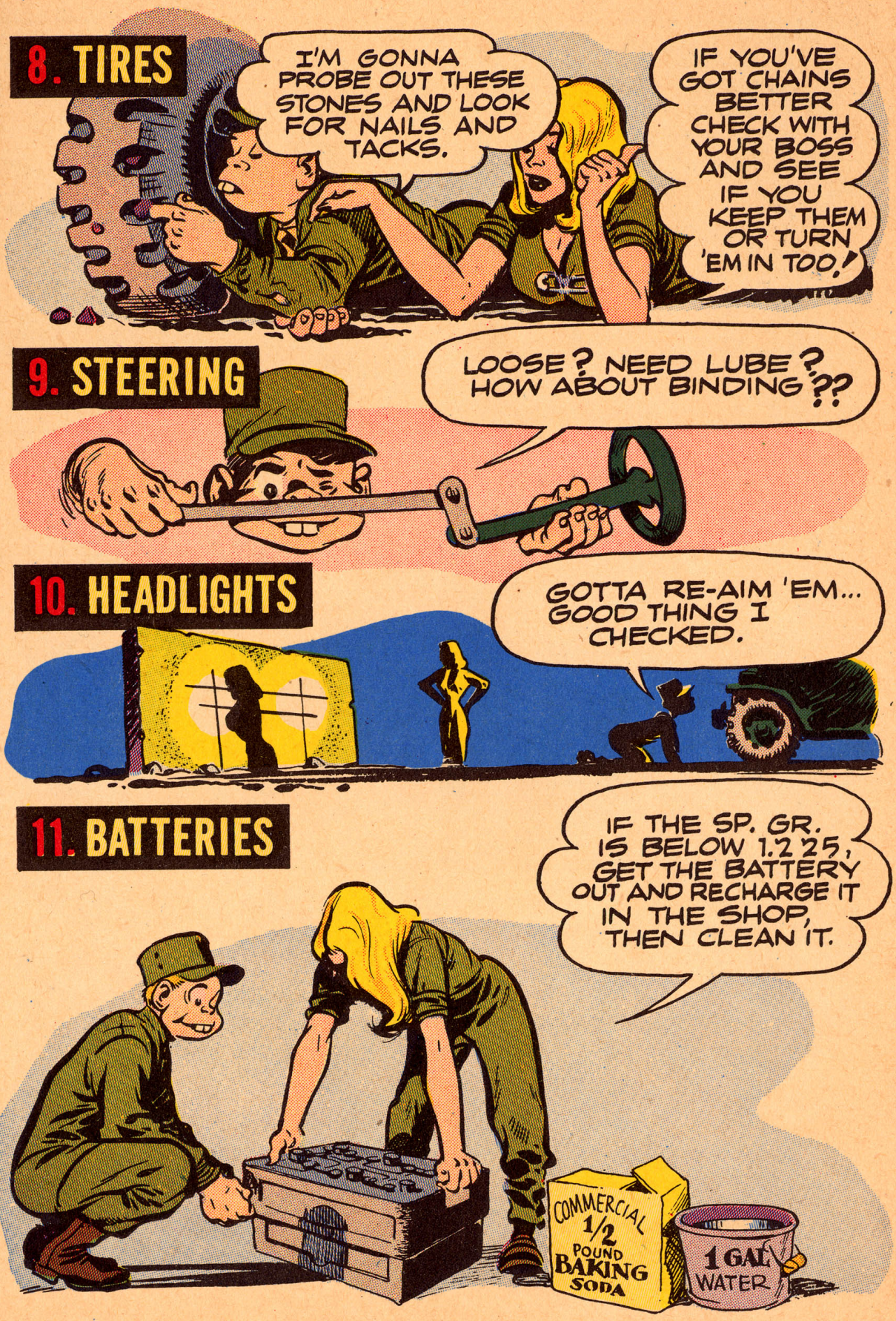


UIPMENT...Take care of it

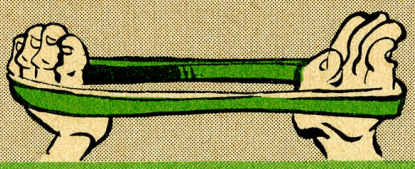
TIONS


NOW IF YOU'VE FINISHED WASHING... WE'LL PROCEED.
4. LUBRICATE
FROM END TO END JOE... LIKE THE LUBE ORDER SAYS.
5. RUST SPOTS
CLEAN 'EM OFF WITH FINE SANDPAPER AND PAINT.
6. ELECTRICAL
CRACKED LINES OR CABLES?
7. BRAKES
CRACKED BRAKE HOSES, KIDDO?


8. TIRES
I'M GONNA PROBE OUT THESE STONES AND LOOK FOR NAILS AND TACKS.
IF YOU'VE GOT CHAINS BETTER CHECK WITH YOUR BOSS AND SEE IF YOU KEEP THEM OR TURN 'EM IN TOO!
9. STEERING
LOOSE? NEED LUBE? HOW ABOUT BINDING??
10. HEADLIGHTS
GOTTA RE-AIM 'EM... GOOD THING I CHECKED.
11. BATTERIES
IF THE SP. GR. IS BELOW 1.225, GET THE BATTERY OUT AND RECHARGE IT IN THE SHOP, THEN CLEAN IT.
COMMERCIAL 1/2 POUND BAKING SODA
1 GAL WATER

WOT NEXT, CONNIE ?
DEAR ME, THIS PIN CAME UNDONE. OH, WELL IT'S Spring!
POP
...TO CONTINUE, WE INSPECT TARPS FOR EXCESS WEAR.
TIGHTEN ALL LOOSE BODY NUTS....FAN BELT SHOULD BE ADJUSTED.
FILL MASTER BRAKE CYLINDER, CHECK ALL WINDOWS...GLASS, AND OPERATION.
CLEAN AND RE-LUBE WINCH...AND CHECK WITH ORDNANCE FOR ANY LATE MWO ON YOUR VEHICLE.
I FORGOT...MY FIRE EXTINGUISHER OUGHTA....BE.... CHECKED.....

Here's how to fix that



JEEP CRANKSHAFT PULLEY

Take a look at that double-V crankshaft pulley on the M38 and M38A1 ¼-tons. If the two discs are pulling apart, it means that the pulley has broken at the welds and you'll need a new one.

If you need a fix faster than you can get supplied with a new pulley, look around for someone with the time, tools, and training (as the saying goes) and a big, warm heart (your Ordnance support units, f'rinstance). There's a production change that can be used in the field to make the loose discs serviceable again—they're now being welded ***and*** riveted.

Here's how they do it:

Take off the pulley and bore three ¼" holes through the discs (Fig. 1); The holes have to be spaced just-so or your pulley'll be kicked out of balance. Space the first hole 30° off the keyway, and make sure all three holes are in a 2¾" diameter circle.

Tie the discs together with three 7/32" x 7/16" flat-head rivets. (Fig. 2). Brad 'em down and you've got her for good.

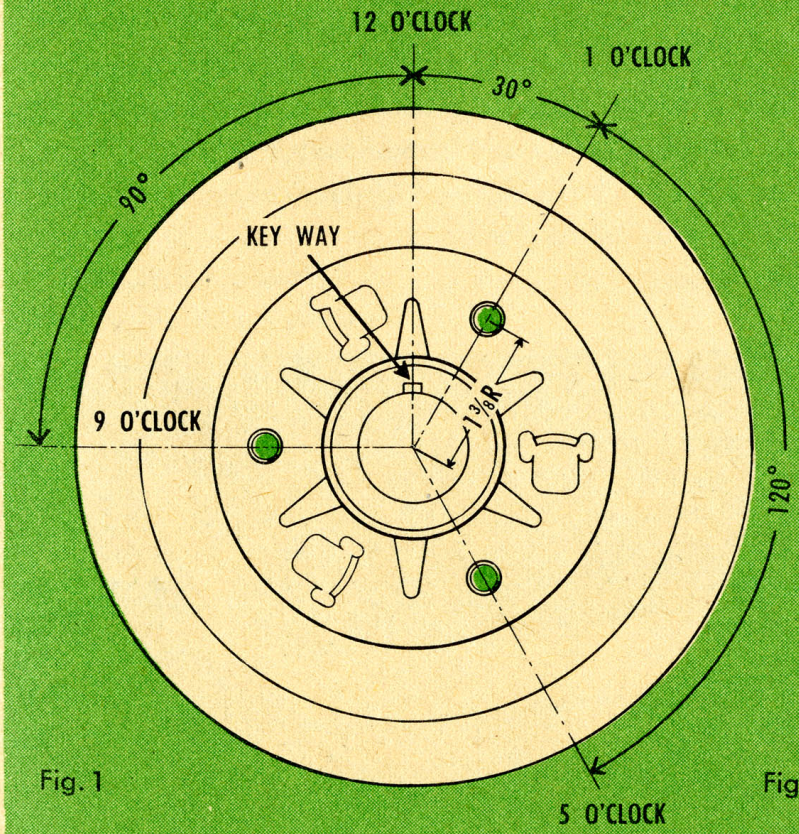


Fig. 1

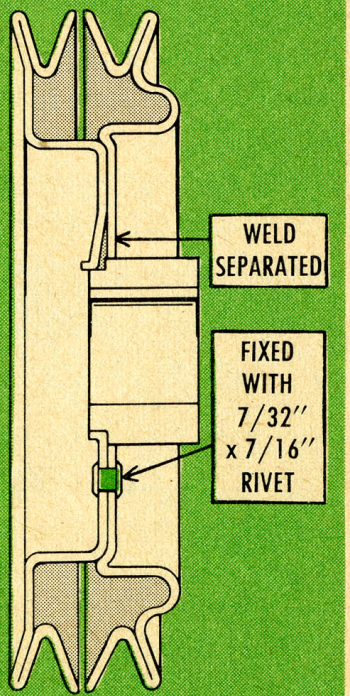


Fig. 2 SECTIONAL VIEW

CONTRIBUTIONS

TORQUE WRENCH ADAPTER

Dear Editor,

Considerable trouble from blown or leaking manifold gaskets as well as cracked manifolds is being experienced on the M135 in the field. Most of it is caused by improper or uneven torque of the manifold stud nuts.

Here's a tool (Fig. 1) adaptable to the torque wrench which can be used to get the proper torque of 20 to 25 foot pounds on those manifold stud nuts. It can be made in an Ordnance machine and welding shop.

Howard E. Gray, OCT
Ft Leonard Wood, Missouri

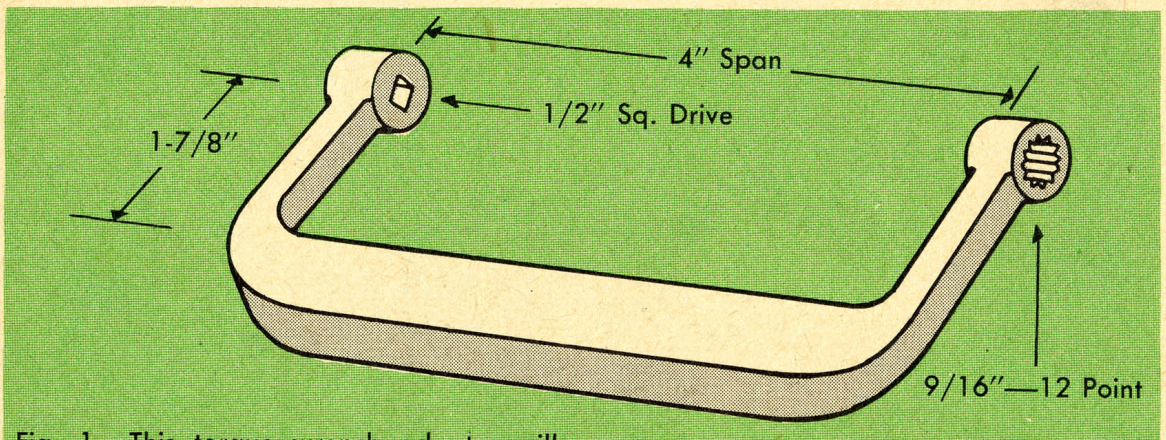


Fig. 1—This torque wrench adapter will pull your M135 manifold stud nuts up even.

GUMMED-UP DIMMER SWITCHES

Dear Editor,

Some of the boys are getting a vehicle back in service now and then by washing out the dimmer switch in cleaning solvent. If the only thing wrong with it is excess grease and dirt in the plumbing, this will sometimes put it back in service for awhile.

Cpl Dean Harding
APO 219, New York

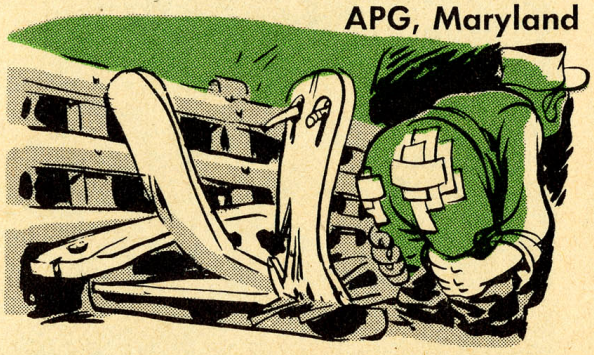
(Ed Note—Sounds fine. Anyhow, it costs very little to try before requisitioning a new switch.)

TIGHTEN STAKE BODY NUTS

Dear Editor,

Could be that the nuts on the carriage bolts that hold the body side rack and troop seat slats together on the GMC 2½-ton M135-M211 stakes haven't been pulled tight enough and properly staked. It's always good to give those retaining nuts a check for tightness and stake them in place. If you don't, you might find yourself running down the road with your slats down and your seats being pounded apart.

Pvt Don R. Hanes
APG, Maryland



(Ed Note—It's good PM to check any nuts like this and with these that get a good bangin' around, it's even better.)

FREE SWINGING LATCHES

Dear Editor,

From being out in the weather, the stowage box latches on the M47 tanks usually rust and stick so tight it's hard to get them to work. Most people pound them with a hammer . . . more often they snap off before they give.

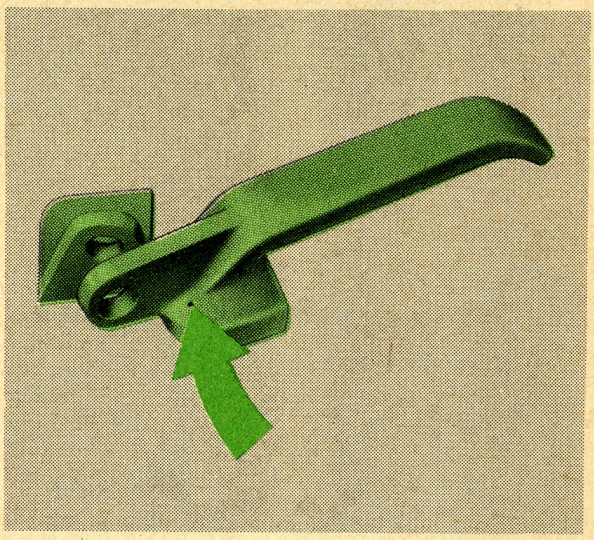


Fig. 2—The arrow marks the spot at which the latch lubing hole should be drilled.

To remedy this nuisance, drill a ⅛" hole through the side of the handle directly above the spindle (Fig 2); do this on every latch handle. This'll give you an opening for lubing the spindle and will stop the rusting and seizing. Then at your regular PM services give them a shot of OE.

If there are already frozen latches on your stowage boxes, after drilling the hole, blow out the metal chips, squirt in some issue penetrating oil, Stock No. 14-O-2833-992, let it set awhile then tap it with a hammer until it moves freely. From there on out keep it lubed.

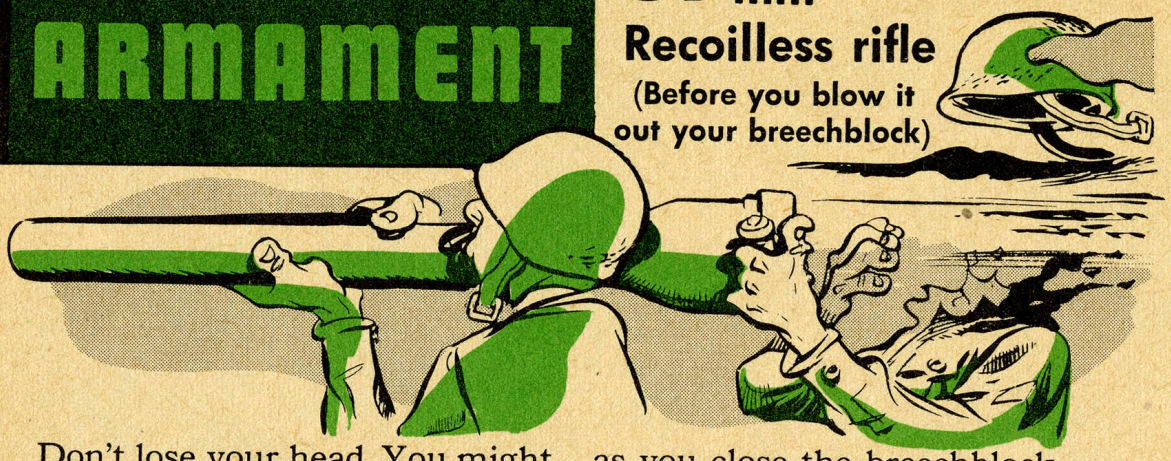
L. F. Slayton
Ft. Knox, Kentucky

Take a close look at that

ARMAMENT

57 mm Recoilless rifle

(Before you blow it out your breechblock)



Don't lose your head. You might if you don't read any further, 'cause we're telling you about an open invitation to a big blowout.

Before you pull the trigger again on your favorite M18A1 57mm Recoilless Rifle, take a closer look at the firing-pin bushing. Check those three retaining screws. Look closely to see if they are tight and haven't let the bushing ride forward.

Seems as how the force of the firing pin eventually causes the retaining shoulders of the bushing to break off. Specially when you do a lot of dry-firing.

You can't tell this has happened unless you check things real close. When it does break, this is what happens—the bushing starts to ride forward—each trigger squeeze moves it forward a little more—then, 10 or 15 rounds after the break—Pow! Right in the kisser.

If the bushing rides forward far enough, you'll get a premature fire as you close the breechblock.

The only sure medicine for this ailment is to check those screws every day—twice a day if you're firing a lot. If the bushing rides out of the breechblock when the screws are tight, yell for help from Ordnance.

Or you might get a snootfull of something you didn't bargain for.

here's HOW with

CONVERSION'S THE WORD

One day soon an Ordnance instrument repairman will drop by and take the M41A2 telescope mount off your 105mm Howitzer (if you're using that model) and when he gets done working it over, it'll be an M21A1—name plate and all. He'll be doing what MWO Ord F197-W5 (Sept 53) tells him to do, so be kind to him.

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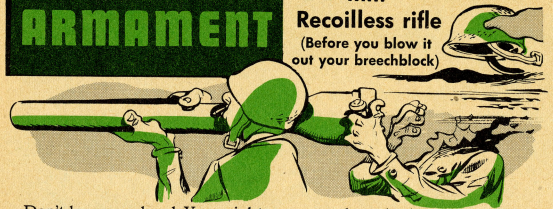
57mm Recoilless rifle

(Before you blow it out your breechblock)



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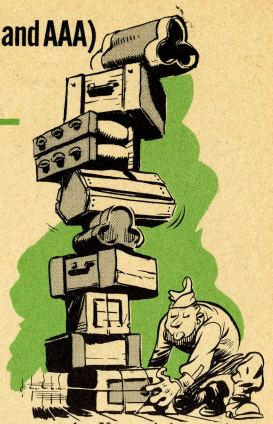
GIVE YOUR 155 THE AIR

Don't some of you alleged artillerymen know you've gotta drain the air-cylinder filter on your 155-Howitzer when you're done towin' 'em? Just like any other part of an air system, it'll get full of water from condensation and rust up or freeze. Saw one that was so stuck they had to bust it to get it off.

In the Field-R-Till-Er-Ree (and AAA)

KNOW—

DON'T BLOW— YOUR STACKS



Drop your trail-spade by the stove, friend, and let's swap tall tales about short people and long guns—things these here Old Soldiers know and don't like to give away.

Smart old-timers, and a lot of young fellers, too, will give you some surprising information when it comes to what makes guns fire accurately. You might not have realized it, but one place where firing accuracy begins is with the guy who piles the ammo in the ready stacks.

Prompt, un-hesitating on-target artillery fire is not possible if you don't watch what you're doing in preparing the ready stacks. Ammo must be sorted according to lots and zone weights if you want quick, accurate fire.

Look out for mixed stacks. If you disregard ammunition lots and zone weights in sorting ready stacks, you have passed up a good opportunity to minimize the differences between consecutive rounds. (That goes for you AAA characters, too.)

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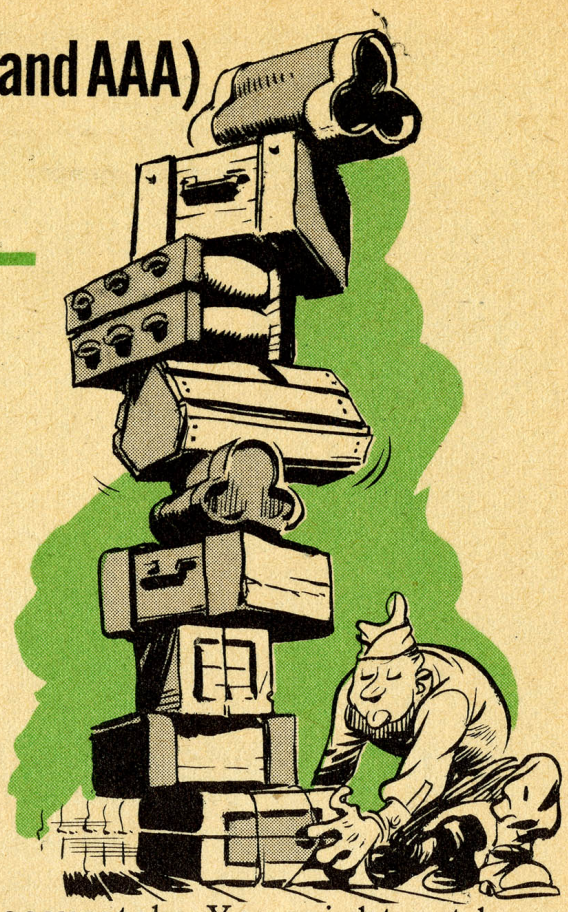

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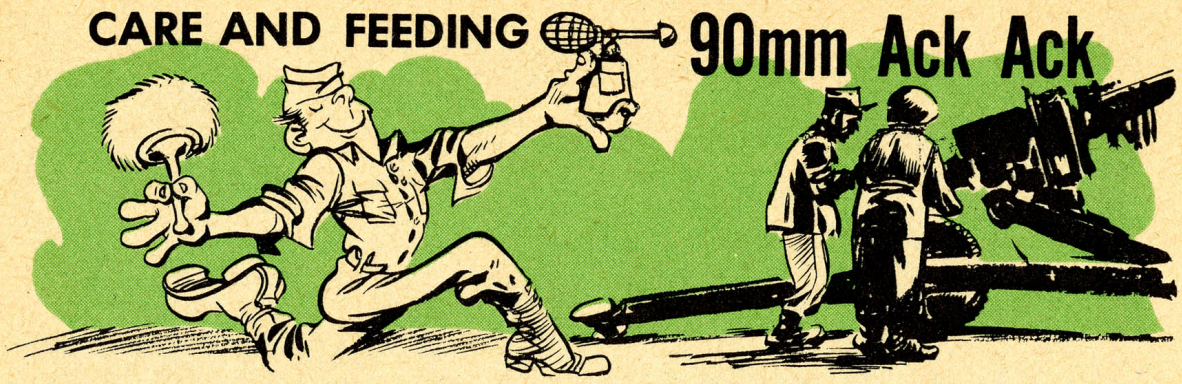
CARE AND FEEDING 90mm Ack Ack



Letters from some sharp-eyed bozos in the field bring to our attention some "lacks" and some "extras" in Ord 7 SNL D-38 covering organizational maintenance allowances for 90mm AA guns. That is, for the M2, M2A1, and M2A2—all on the M2 mount.

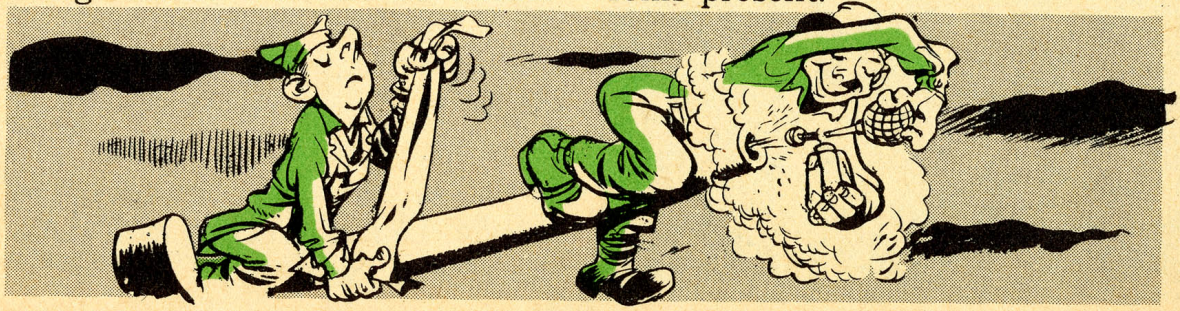
Seeing as how organizational troops are not allowed to make adjustments of the equilibrators, both the equilibrator wrench and the equilibrator wrench guide should not be listed in the SNL; so, you won't be able to get it.

The 15-ton lifting jack was supposed to have been in Ord 6 SNL J-10, Section 3, but somehow got left out. The jack is authorized, even though it's not in the book. It's listed under Stock No. 41-J-159-50.

The piston retainer wrenches and the chain terminal and operating cranks will not be authorized in the next revision of Ord 7 SNL D-28 and Ord 7 SNL D-38. You can't get universal gear lubricant, 75 or 90, either.

In the way of oils and lubrication—you'll see that oil, engine preservative (PE) is called for in LO 9-372, even though it's not listed in the SNL. Its stock numbers are: Grade 1 (SAE 10)—5-gal. drum, 14-O-2370-5, 55-gal. drum, 14-O-2370-55; Grade 2 (SAE 30)—5-gal. drum, 14-O-2372-5, 55-gal. drum, 14-O-2372-55.

For the hydraulic jack and recoil mechanism, oil, hydraulic, petroleum base (MIL-O-5606) is what the doctors order. For any recoil mechanism not check-fired after filling with the new-type oil, you check-fire it when you have Ordnance folks around to see how she works. If necessary, check-firing can be done without Ordnance folks present.



BAR men

Control Your Gas with the New Improved Plug

You can now plug up your gas-cylinder troubles on the Browning Automatic Rifle with a new kind of gas-cylinder body, or plug.

It's a new-type plug that makes adjustment a snap, without tools—even in the dark.

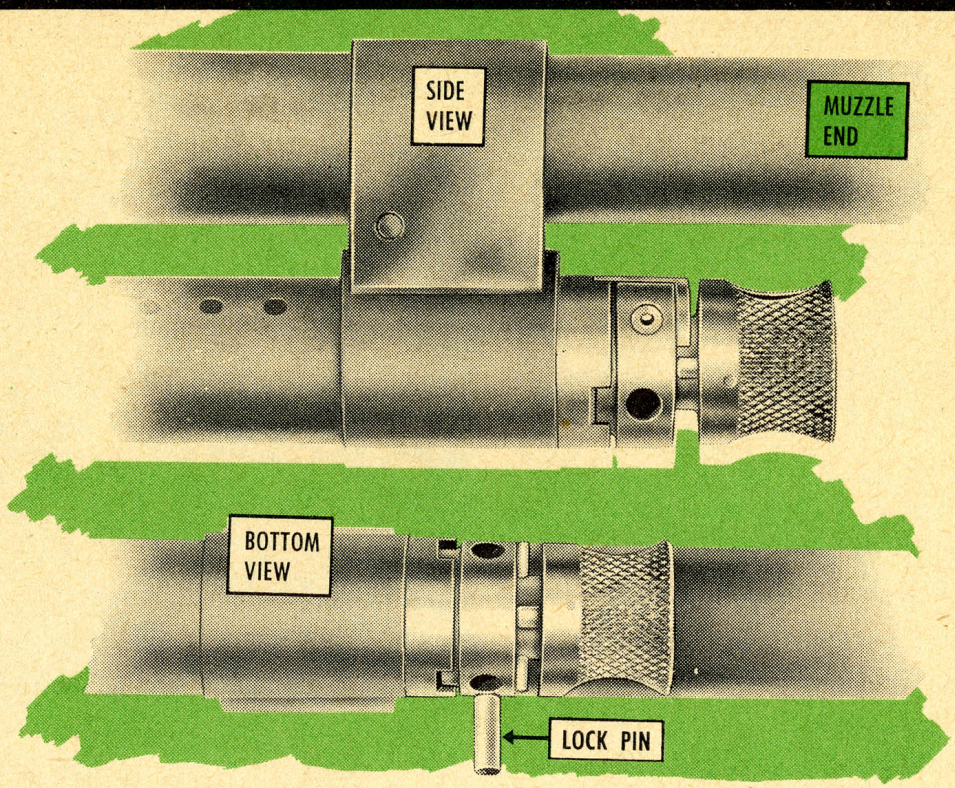
What's with this new jim-dandy gadget? This improved plug has a positive spring and alining notches that not only line-up the different gas ports but hold the plug right where you want it.

It's longer than the old plug, with a big, knurled turning knob that works fine in the dark or when you're wearing gloves. Since the gas cylinder tube hasn't been changed, the plugs are interchangeable. The new assembly gives a choice of three gas ports, and these are lined up with a spring pin.

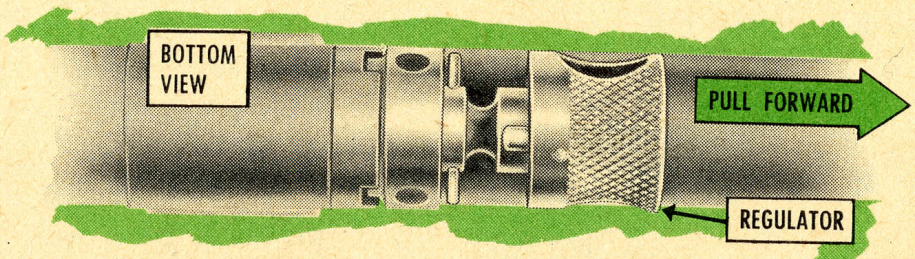
Just like other things, though—when operation becomes more automatic, care and cleaning become more important. Because of that, you have to be more careful in removing this gadget for cleaning.

A goofed-up rifle will be all you'll get if you try removing the entire assembly without taking the regulator out first—that's the piece with the knob that turns inside the body. Remember that it has to come out by itself. So turn the page and read on.

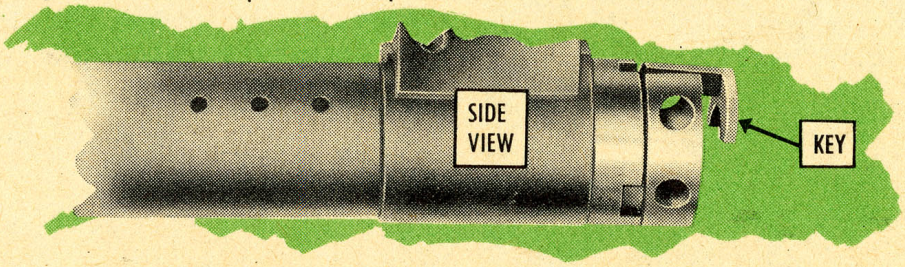
HERE'S HOW THE NEW GADGET LOOKS INSTALLED



First thing, drive out the body lock pin. This is a ticklish little job, so hit where you're lookin' and look where you're hittin'. Some Joes have tried this in a hurry and parts of next month's pay disappeared faster than a "flying twenty."

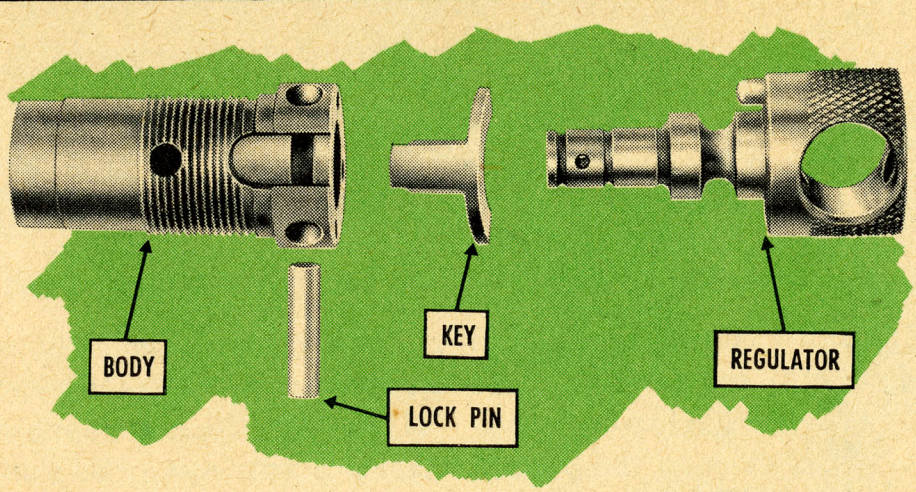


After you get the pin out, the regulator assembly is taken out by turning it and pulling forward—that is, toward the muzzle. It might stick in the body because of carbon deposits, but a few taps with a cellulose mallet (not a metal one) should loosen it. If you haven't got a mallet, wrap a solid object in a sock or several folds of cloth and use that.



After you have the regulator assembly out, drive out the body key from the notch in the gas cylinder tube and body of the gas cylinder. Your combination tool can be used to screw the body out of the tube.

THE PARTS'LL LOOK LIKE THIS WHEN YOU FINISH



With that done, you're ready to clean the body with your gas cylinder tool and you also can get at the tube. **A word of caution though:** The regulator assembly, that part you took out first, is to be left together. Characters who insist on taking it apart will find themselves in the well-known sling.

To get things back together, just reverse the steps you took to get them apart—make sure first thing that after the body is screwed in tight, it's backed off until the key notch lines up with the notch of the tube, directly under the barrel. These BAR's can be as touchy as a Saturday night date, so this cleaning business is needed to keep them in the right mood.

There is a chance, tho' that doing it too often will hurt those little parts. Specially when you have to drive that tight-fitting pin in and out. Do it often enough to keep things working right, but don't do it for fun or it'll wear out.

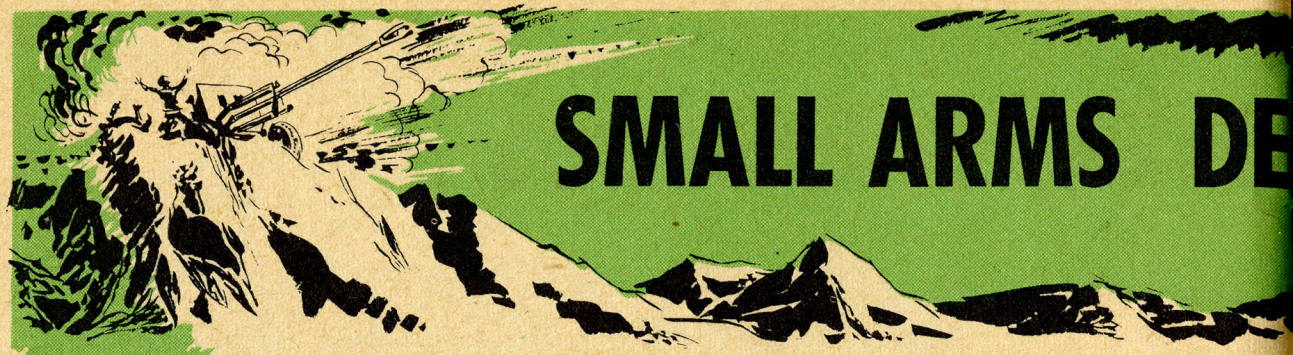
This new outfit is made of stainless steel, so you shouldn't have too much trouble with corrosion and carbon until you fire a considerable number of rounds.

STOCK NUMBERS

For those of you who like the name, rank, and serial number, look no more. We have them right here.

Entire Unit: Gas Cylinder Assembly, Stock No. 7162349.

PARTS	STOCK NO.
Gas Cylinder Body	7266093
Body Key	7266094
Regulator Assembly	7266106
Body Lock Pin	7266091



SMALL ARMS DE

EASY ON THE M30 CRANKS

You've got a couple cranks on your M30, 4.2″ mortar that you should go easy with. One of them's the elevating crank and the other's for traversing. On some models they're aluminum—later ones have steel cranks.

If you take it easy, they'll hold up and do you a good turn but,—treat 'em rough and maybe you won't know whether your mortar's up, down, or crosswise. You gotta remember—that traversing crank has to be folded in the slot on the traversing wheel before you start taking your mortar apart.

BEDDING AN M30 MORTAR

For gosh sakes, fellas, that M30, 4.2″ mortar's not a sawdust savage. Its base plates can't stand bouncing directly on logs or hard dunnage any more than yours can.

When you bed it down on soft or swampy ground and use logs or dunnage for a foundation, put a layer of dirt or sand bags between the base plate and logs for a cushion effect. You'll be surprised at how many more rounds its bottom'll be good for.

HOW TO BE A HIT

Before you open the cover assembly on your M1919A4 or M1919A6 .30 cal. machine guns, be sure you raise the front sight. If you do this, it'll still draw a bead when you need it.

When the front sight is left in the down position, the blade end of the sight sticks over the hinge end of the cover and the cover hits the sight blade. In addition to your big mitts, a spring helps to move the cover back and hold it there. With the force of both, the cover hits the sight. It can break off the sight blade.

No sight—no hit. Better to be a hit than a miss. Why gamble?

SMALL ARMS DELIVERS THE GOODS

EASY ON THE M30 CRANKS

You've got a couple cranks on your M30, 4.2″ mortar that you should go easy with. One of them's the elevating crank and the other's for traversing. On some models they're aluminum—later ones have steel cranks.

If you take it easy, they'll hold up and do you a good turn but,—treat 'em rough and maybe you won't know whether your mortar's up, down, or crosswise. You gotta remember—that traversing crank has to be folded in the slot on the traversing wheel before you start taking your mortar apart.

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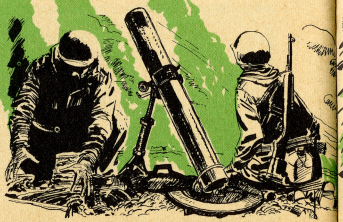


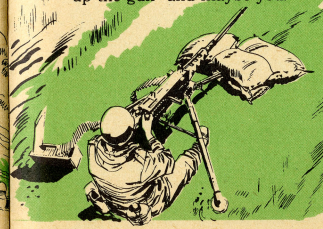
HOTTER THAN A TWO-DOLLAR PISTOL

That old faithful hand-held pyrotechnic projector, the M9, costs more than any two bucks, but when used with the M74 Flash and Sound Signal she can be hotter than the proverbial $2 pistol.

Some commands are acting to stop use of the M9 with explosive type signals. So if you're called on to fire that M74 sound-flare, check the local ground rules. A sure safe bet, if one is available, is the Pistol, Pyrotechnic, AN-M8.

BLOWING YOUR BOLT

After lubing your rifle or machine gun, be sure to wipe excess oil from the bore and chamber. Too much oil at either place can bust up the gun—and maybe you.



Excess oil in the chamber or barrel will raise the breach pressure to a dangerous point when the gun is fired. It could blow the bolt, ruin your gun, and send pieces flying in your face.

A gun that's too oily also picks up grit which not only wears the devil out of moving parts but can cause a stoppage or malfunction.

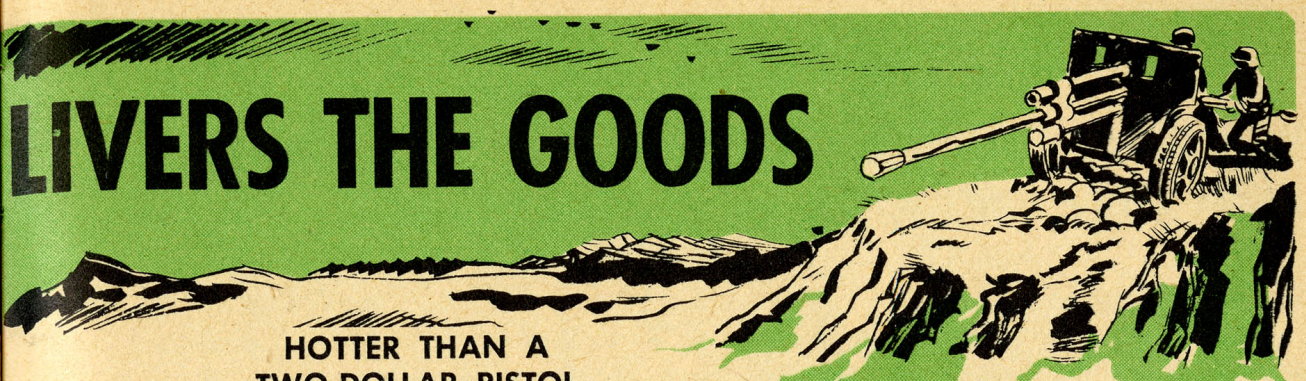
HOW'S YOUR STOCK?

Linseed oil's what you need to keep your rifle stock in condition. You can get raw linseed oil under Ord Stock No. 57-O-725.

Every time you use your rifle, wipe dampness, dirt and perspiration off the stock with a dry cloth. Once a month you oughta apply raw linseed oil. When you apply the oil, wipe off the excess and polish the stock with a clean dry cloth or the palm of your hand.

Be careful to keep the oil away from the metal parts of the rifle because it will harden and mess up the moving parts. And, if you've got a rifle with a varnished stock just wipe it clean and forget about the linseed oil.

LIVERS THE GOODS



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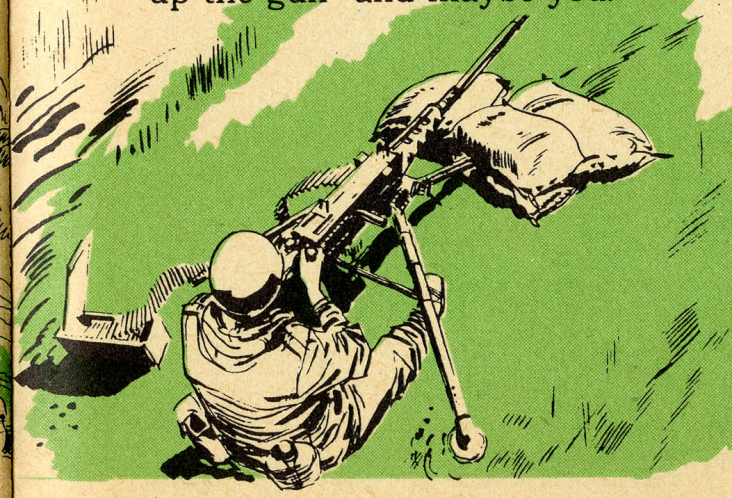

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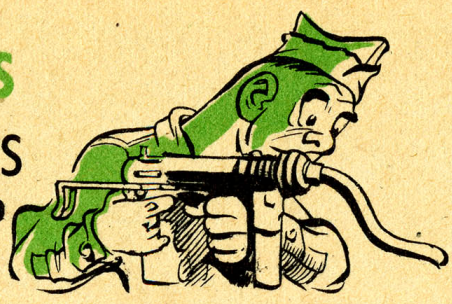
WITH SUBMACHINE GUNS

WHY HAVE A BARREL THAT'S LIMP, WEAK AND WOBBLY?



You Fancy Dans with the submachine guns—did you ever go to get your gun and find everything too loose? The barrel, that is. Some PS readers have. Others have had the inspector find loose barrels for them.

If the matter interests you, and you figure loose barrel ratchet-springs might cause you some trouble, lend an ear to the four most likely causes of such an ailment.

First, the notches and ridges on the face of the ratchet spring may be worn down. On the other hand, maybe the same thing has happened to the notches and ridges on the barrel collar.

If that doesn't cause the trouble, look for a ratchet spring that's bent back away from the barrel collar so's it won't hold the barrel tight. As a last resort, check the whole ratchet spring assembly for looseness.

What generally happens in this last case is the rivets get loose or worn, letting up the ratchet spring's hold on the barrel. In any case, the ratchet spring doesn't do the job it was supposed to do—hold the barrel in place.

About all you can do about it is bend the ratchet spring (Fig. 1) toward the barrel (take the barrel out for this) if it is bent in the wrong direction. Careful—just enough to make it hold tight.

If the ratchet spring or barrel collar is worn or if the ratchet spring is loose at the rivets, it's a job for Ordnance. Turn the weapon over to them for a new ratchet spring or barrel or for tightening the rivets. They have the tools to do the job proper-like.

Take a squint at those 45 cal. spitfires. You may catch today what somebody else will jump you for tomorrow. Like the old saying, "A stitch in time."

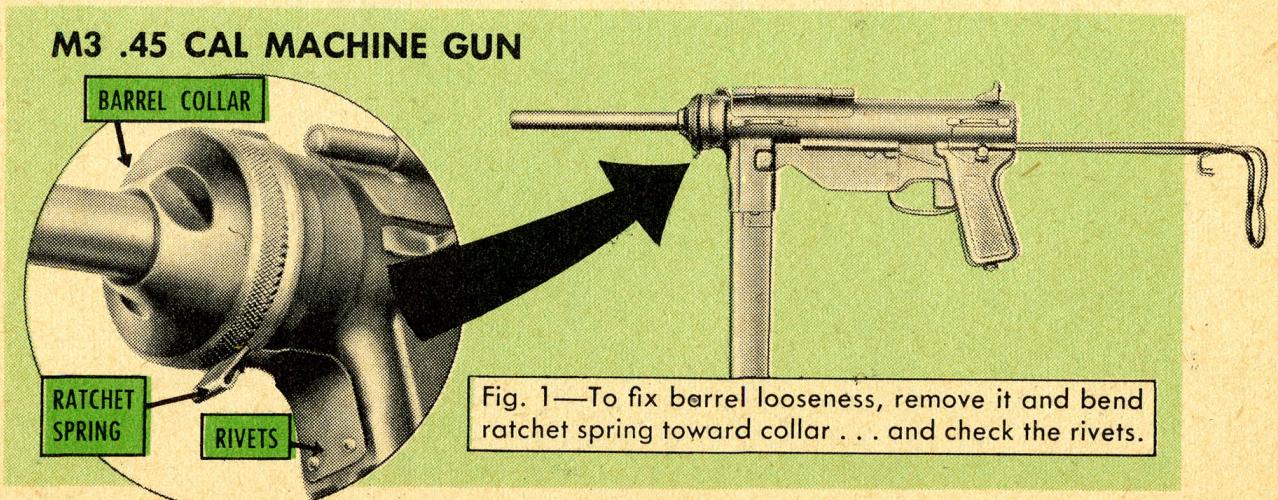
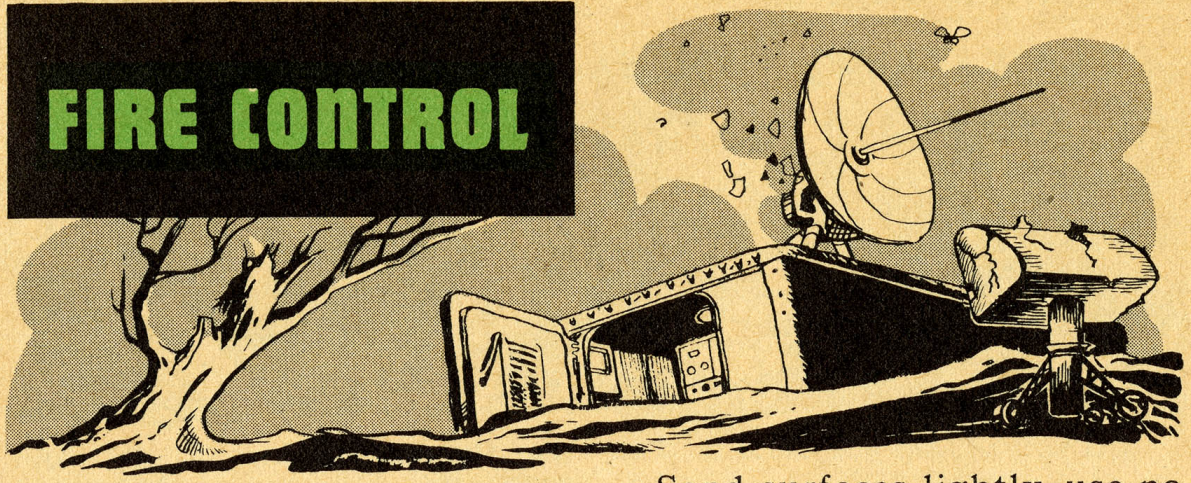


Fig. 1—To fix barrel looseness, remove it and bend ratchet spring toward collar . . . and check the rivets.

FIRE CONTROL



HOW'S YOUR FEELER PEELIN'?

Some of you Fire Control lads—'specially them as has been lounging around positions in the good salt air—have screamed here lately about paint peeling on the antenna equipment. Seems as how regular paint fuzzes the fix, and if you don't paint, etching starts and you get pretty poor detection.

Never fear, lads. If your electronic feelers have started peelin', here's the dope you need:

In order not to interfere with the signal, a non-metallic paint is in order, so order: Non-metallic paint, air drying, olive drab semi-gloss synthetic enamel, No. 2430, FS TT-C595, 1 gal. can, Spec MIL-E-11857, Class A. This paint is available through regular supply channels from the Corps of Engineers, Stock No. 52-3476.017-100.

It's useless to use this non-metallic paint if you foul it up with just any thinner—right one is: Thinner, synthetic, enamel, TT-T-306, Stock No. 52-7-445.

Sand surfaces lightly, use no priming coat and allow plenty of time between first and second coats. This paint is special stuff, remember, so allow 18 hours after the second coat before you handle it, if you can.

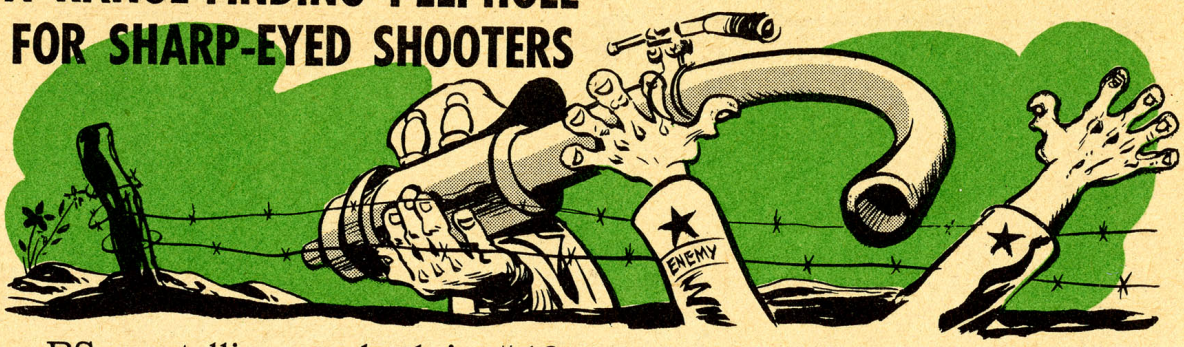
On other metallic surfaces of the M33 Acquisition Antenna and to the complete T33 Acquisition Antenna, the correct paint is listed in the current Ord 7 SNL F-342. It's Enamel FS TT-E-485, Type IV, Stock No. 52-3433.700-005. It's also handy for touching up the trailer and van body.

57-RECOILLESS SIGHT

You've a new calibrated sight leaf coming to you for your M74 sight mount for your 57mm recoilless rifle. It's a new leaf for use with a new ammunition round. With the new sight leaf in place the sight mount will be the M74C. MWO Ord F320-W1 (Sept 53) says it's urgent. Your Ordnance instrument repairman does the job.

Stadia line reticles

A RANGE-FINDING PEEPHOLE FOR SHARP-EYED SHOOTERS



PS was telling you back in #13 (on page 592) just how the reticle markings would be changed in your telescope—the one on your 57mm recoilless rifle—when it's changed from the M86C Telescope to the M86F.

It was a pretty good job of showing the changes—how the stadia lines were added, but seems as how a little more explainin' is in order, though, on just how you use them for more hits.

It all boils down to this—the only reason those stadia lines are in there is to give you a pretty good indication of the distance from you to your target. Look at 'em. The longer the range—the shorter the distance between the stadia lines.

The lines are spaced the way they are for this reason—the longer the distance from you to your target, the smaller the target will look. This spacing of the stadia lines is figured for a 20′ target which is the average length of a tank. Half of that, or 10′, is the average width of a tank.

Figures 1 thru 4 show how you use the stadia lines to get your range.

Simple? Sure, 'cause all you gotta do is remember those three types of targets. Then you'll have the right range every time.

Wait a minute. Come back here—that's not all. Remember that what you've just done won't give you the right sight-picture for aiming. Once you get your range you must know how to figure your leads when you're aiming.

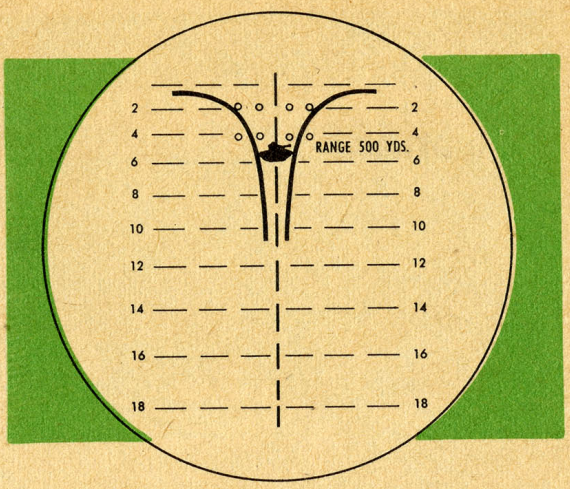
First, get your range with the stadia lines. Secondly, the estimated target speed will tell you if you have to lead it and how much (2 leads for SLOW, 4 leads for MEDIUM, 6 leads for FAST)*. Last, lay the correct range line (or estimated one if in between) right along the top of the track, ease the target off center the correct amount if you need a lead, and—Wham! Right in the guts.

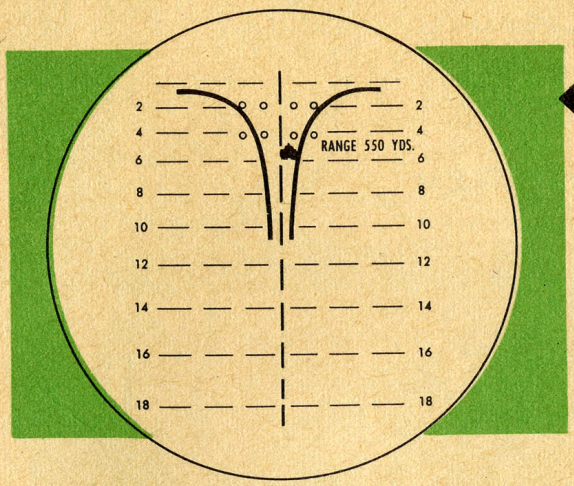
You've got more firepower on your shoulder than a lot of the world's artillery men carry around on carts. Use that telescope right and you can drop one in their back pockets.

LAY IT LIKE THIS:

1 BROADSIDE TARGETS

If a tank is moving directly across your line of sight (broadside to you) you can count on it being pretty close to 20′ across. Catch it in your telescope and drop her down that "V" of the stadia lines until both ends of the tank are just resting on each line. Then you can read the correct range—like the 500 yards shown at right.





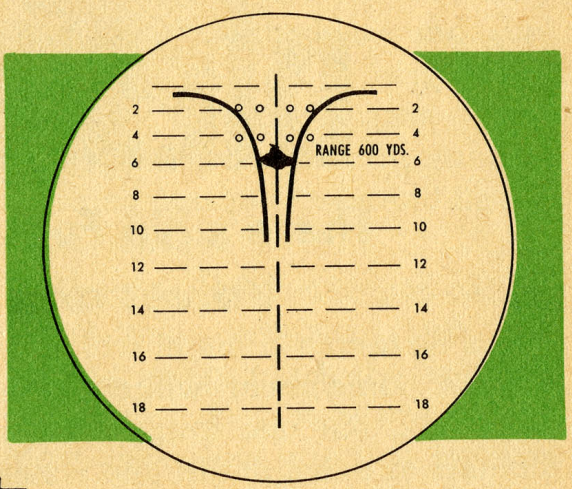
2 HEAD-ON TARGETS

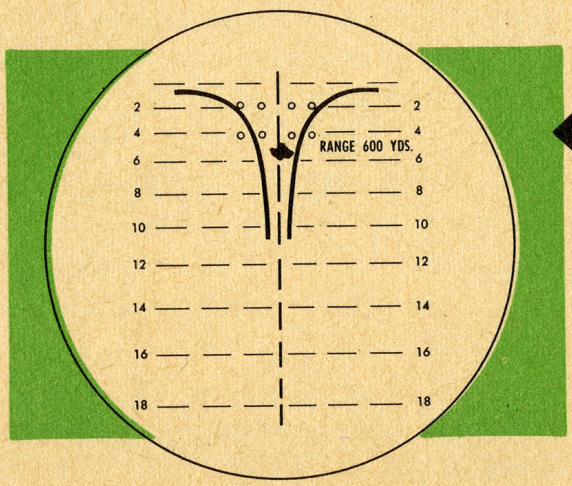
If a tank is coming straight at you (or going straight away from you) it's pretty close to 10′ wide. When you get it in your 'scope, hold it between the center-line and the stadia line on one side—dropping it down one side of the "V" until one edge of the target is resting on the center-line and the other edge is on one stadia line. Then read the correct range—like the 550 yards shown at the left.

3 OBLIQUE TARGETS

There's a possibility of two different kinds of oblique, or slant, targets—those are targets moving at you or away from you on an angle. Take care of them like this:

If the length appears greater than the width, treat it like a broadside target and let it touch both stadia lines—like one shown at right.



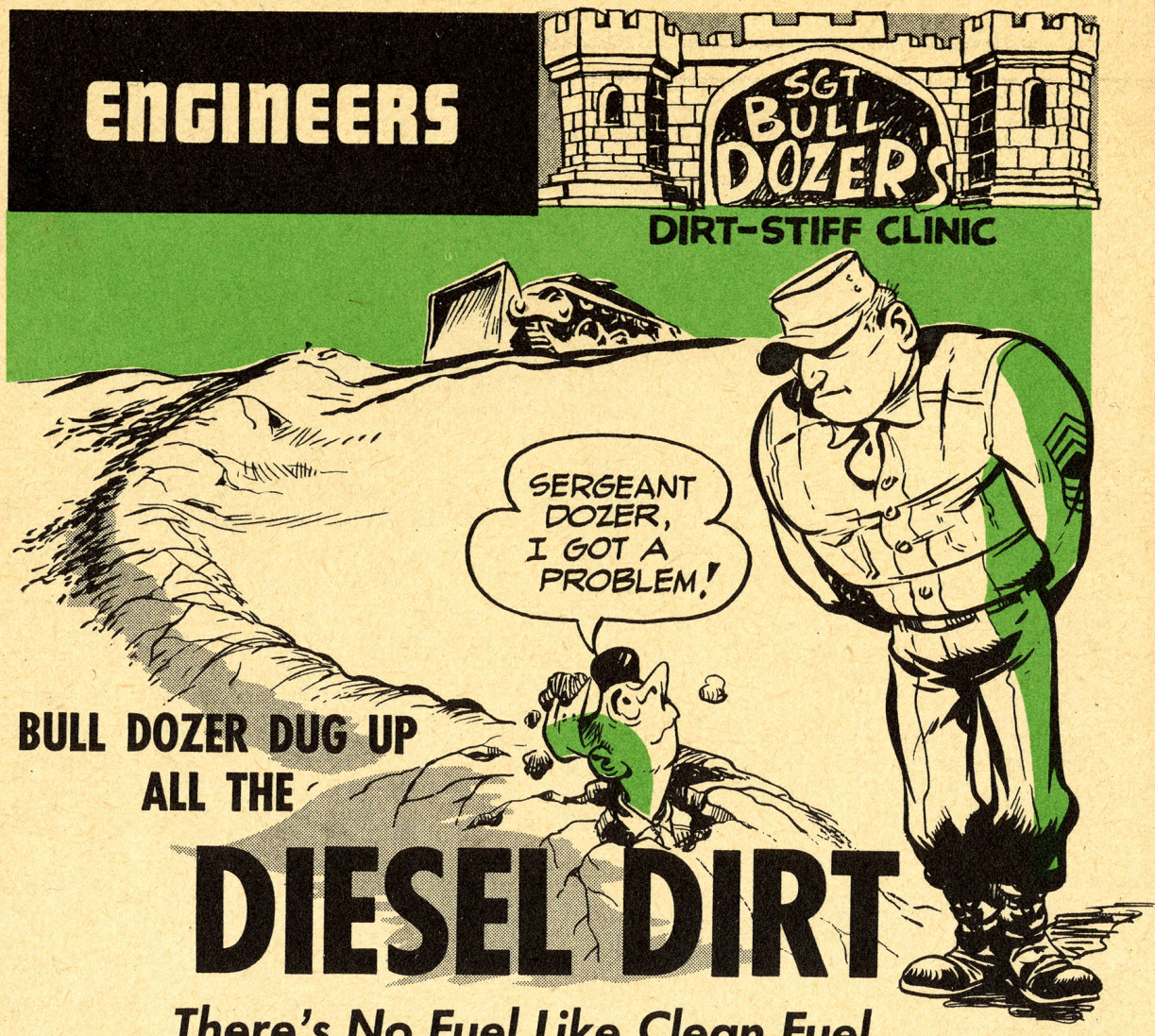


4

If the width seems more than the length when you look at it, treat it like a head-on target. Let the two leading edges of the tank touch just the center-line and the stadia line on one side—like the tank shown at left.

*SLOW: 10-mph or less.
MEDIUM: 10 to 20-mph.
FAST: 20-mph or more.

ENGINEERS



BULL DOZER DUG UP ALL THE DIESEL DIRT

There's No Fuel Like Clean Fuel... Valves and Pumps Like It.

It's no secret—a diesel will take a lotta punishment without any back talk, but one thing it can't stomach is a diet of dirt and water in its fuel injection system.

Every operator or mechanic who's been through the mill knows that the fuel injection system is the heart of a diesel engine. Like your own ticker, it's delicate, precision stuff and it's gotta be handled with kid gloves.

The fuel injection system consists mainly of a fuel pump and a fuel injection valve, or nozzle. Both have parts machined to tolerances so small that you can't even "mike" them, and that's calling 'em real close—even smaller than a gnat's whisker.

That's why a little dirt or water in the pump or valve can conk a diesel out faster'n you can lose a buck in a crap game. So, you've gotta remember: **Keep diesel fuel free of dirt and water.**

DRUM BEATS

You've no protected storage pumps? Here're a coupl'a ideas to drum on:

A'ye?	Oh—	H – mm
1. Build racks	Park your drums on them—back end higher than front	Lets the mish-mosh in the fuel settle. With enough racks the stuff can sink for 24 hours (Fig. 1).
2. Rattling drums make most noise	Handle them with care	Or you'll loosen scale into the fuel.
3. Bung caps can bang	Before you open them	Use a dry brush or air stream for a clean sweep. Rags are hard to keep clean, and lint and thread come out.
	When they're closed	Screw the caps tight—especially in the tropics where moisture's a big menace.
4. Check the buckets, pails and cans.	Are yours clean?	Cover when not in use. A scrubbing may be in order.

TRAPS AND DRAINS

That eager beaver who spends his time tearing a tractor apart to find out why his engine has bad knocks, heavy black exhaust and misfiring, without first checking his fuel injection system, can make a lotta extra work for himself. If he's diesel hep, that's the first thing he'd suspect, and it's surprising how often he'd be right. And the root of the trouble, in all probability, is contaminated fuel.

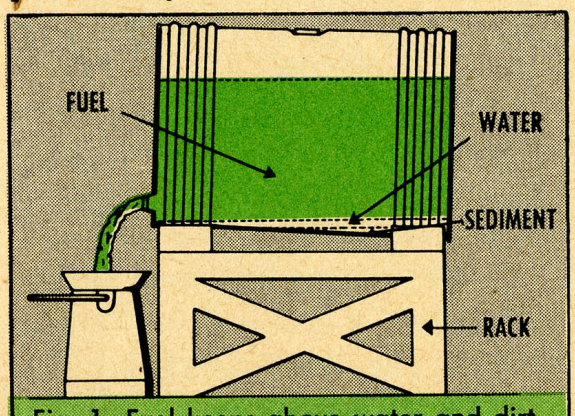


Fig. 1—Fuel keeps above water and dirt—if drum's rear end is lower than its front.

Remember those close tolerances we were talking about? Now, when foreign matter in the fuel gets into the fuel injection pumps and valves, it'll grind away on these very finely-ground surfaces. And, it won't be long before you have irregular engine operation—like hard starting knocks, misfiring, loss of power and heavy, black exhaust.

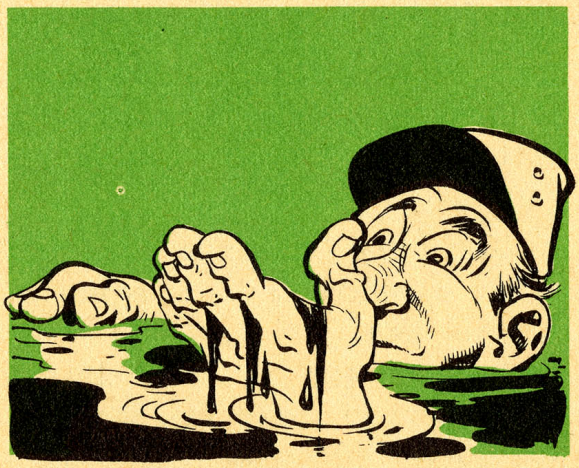
Water in the fuel causes corrosion of these precision parts and you get pretty much the same effect as dirt on pumps and valves. Most diesel fuel injection systems are made so they'll stop a lot of the water and dirt before it gets into pumps and valves.

Under the fuel tank you'll find either a sump trap or sediment bowl which you ought to drain daily before the machine's started. Be sure to do it after it's been idle for some time—to give the sedi-

ment a chance to settle. If dirt and water get by this point, they can be eliminated further along the fuel system by draining your filters and replacing them—when necessary.

If you think the fuel's contaminated, the best thing to do is to drain the sump trap or sediment bowl first—until the fuel runs clean. Then close the trap or bowl and turn over the main engine with the starting engine (if you've got one) and open the filter drain. By holding your hand under the drain and letting the fuel drip into it, you can usually tell when the fuel is running clean.

But, when too much water gets into the fuel, or if the trap and filters aren't drained regularly, they'll fill up and the water'll get into the fuel injection pumps and valves. You can tell when you've reached this foul-up because, nine times out of ten, the engine will stop running. Then—you're stuck. About all you can do is drain the whole fuel system, from the tank to the engine, including the fuel filters, to get rid of the water.



In freezing weather, water in the fuel injection pumps and valves may freeze and block 'em up. Ice can damage the injection system.

VALVES AND PUMPS

After you do everything to keep the fuel and the fuel system clean, and the engine still spits 'n sputters, you better run a suspicious eye over the fuel injection pumps and valves. Take a gander at their fuel-line connections. Loose connections or leaks in the line will cause poor cylinder firing.

When you install a new fuel-line, be sure to use the right replacement line for each cylinder since each line has a different shape. The shape has a lot to do with the way the cylinder works. If you take a line designed for one cylinder and try to shape it to fit another, you'll wind up with a confused engine. Like trying to make a jeep do the work of a 2½-ton truck.

Pump and valve connections OK? Then try this simple test: Run the engine at its worst (when you get the loudest knocking, most smoke or least power). Cut off each cylinder's fuel supply by loosening the fuel-line nut or vent-plug (something like you test the firing on a gasoline engine by shorting-out the spark plugs).

If loosening the fuel-line makes no difference in how the engine

runs, it means either the injection valve or the fuel injection pump for that cylinder is not up to snuff —that is, if the engine's mechanically OK otherwise (Fig. 2).

Now the big question is: How do you tell whether it's the valve or the pump?

Here y'are: If your diesel has a fuel injection system with injection valves as separate units (they get high-pressure fuel through a line from a separate fuel injection pump), make this test. Take loose the fuel-line from the injection valve and take the valve from the cylinder. Then reconnect the valve

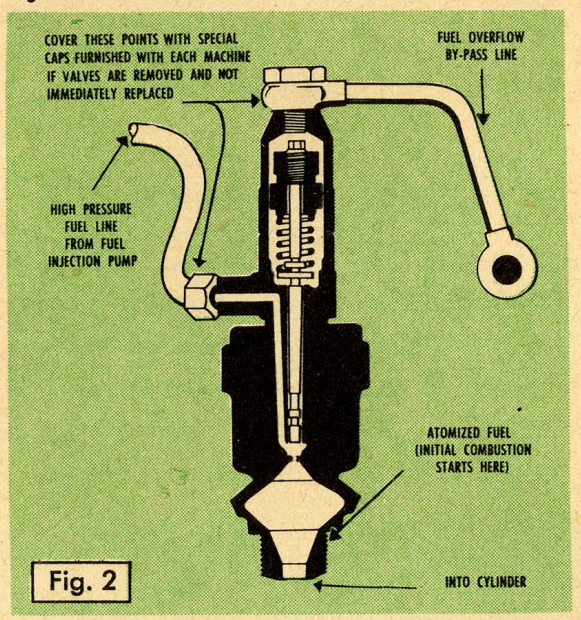


Fig. 2

to the fuel-line, crank the engine at low engine-starting speed and open the throttle. If the injection valve is in good condition, it will give a fine, even spray.

Be careful not to bend fuel-lines out of shape when testing...and brush off dirt around the valve before taking it out.

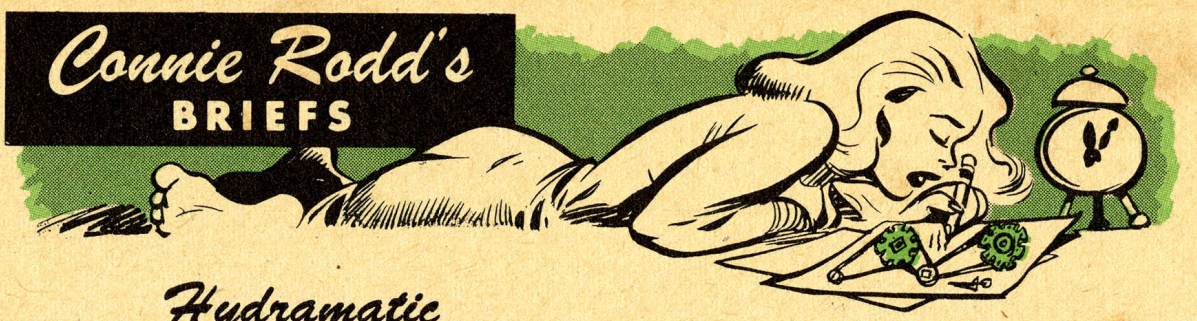
If this test shows that the injection valve is in good condition, the valve and fuel injection pump are probably OK, and the trouble lurks elsewhere. But if the injection valve gives an uneven or irregular spray, or if it drips, you can bet the valve is bad.

Replace this suspected valve with a new or reconditioned valve and repeat the test. If the spray from the new valve is the same as the spray from the old one, then the fuel injection pump is likely bad. Replacing and servicing the pumps is real complicated. So, buck that job to higher echelons for repair.

If you have a fuel injection system where this injection valve spray test can't be made, try replacing a suspected valve with a new valve. If the cylinder is still bad when either valve is used, the pump's likely at fault.

In any case, whether it's the valve or pump, it's the higher echelon boys who have the savvy and equipment to do the job right.

Connie Rodd's BRIEFS



Hydramatic Transmission MWO's

Your GMC 2½-ton M-series truck will get relief from some of her automatic transmission troubles from Ordnance support. MWO's Ord G749-W3, W6, W7, W8, W10, and W12 will be used to perk up her shift. And before this happens, maybe you should check to see if you've done all you could to help—MWO Ord G749-W4 (6 March 53) and W5 (9 March 53) may be just what the doctor ordered for your trouble.

'Tain't yours

Some fellas will try anything—even try to get out a screw that's been staked to a weapon. If you come across a screw that has the head "set" to the piece with a punch or chisel blow, keep hands off. Leave that part of the stripping to Ordnance maintenance people.

Plastic's tough, but—

If you're using the plastic handle of your bayonet for a hammer or maybe playing mumblety-peg with it, take it easy—you might break that handle. Same goes for the plastic scabbard. When you're sportin' one, watch how you sit—you could get splinters.

Flying prop shafts

Be sure to check the propeller-shaft-flange-U-bolts on all your new interim (M-series) transport vehicles. Seems there're some around with bolts only finger tight—better tighten 'em before a shaft comes flying up into the cab.

Here's how it is...about army aircraft

Like every outfit in this man's Army, PS Magazine has its mission—to furnish you with "authentic, preventive maintenance information on all items of Ordnance and Engineer equipment." That's what it says and that's what it means. So . . . PS has to make the most of the space it's got for Ordnance or Engineer equipment.

Nevertheless, Windy Windsock will still be around to keep you posted on tools, generators, fire extinguishers and all the other bits and pieces you find around aircraft that are items of Ordnance or Engineer equipment.

Windy'll stick to his mission, and that means PS will be that much closer to accomplishing its own job of bringing you fast, accurate preventive maintenance dope on the stuff that rolls, shoots, explodes, digs or gets you across a river.

PERPETUAL INDEX

Your monthly reference guide to all subjects covered in the last 12 issues of PS Magazine

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2C—INSIDE FRONT COVER; 3C—INSIDE BACK COVER; 4C—OUTSIDE BACK COVER

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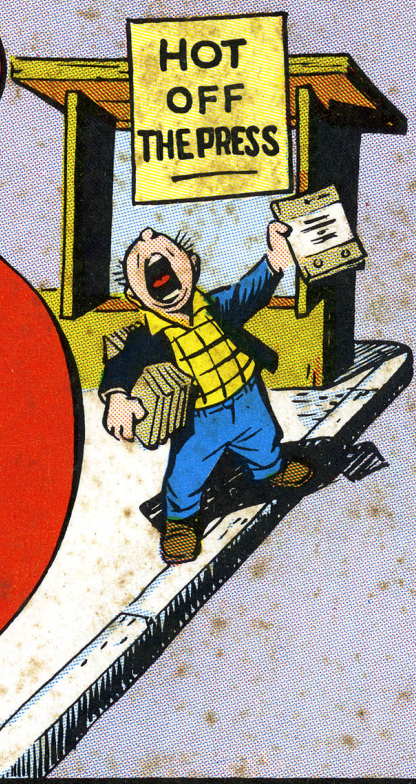

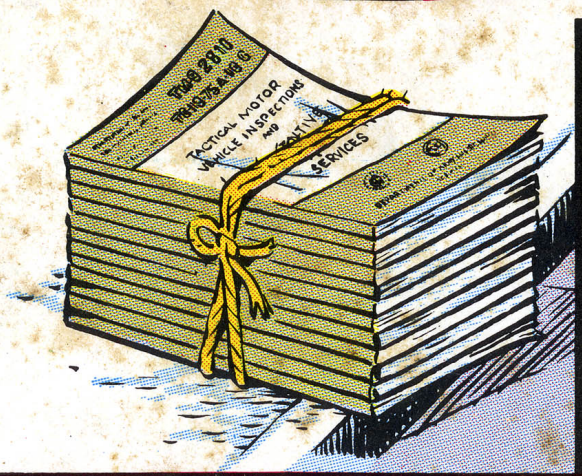

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